

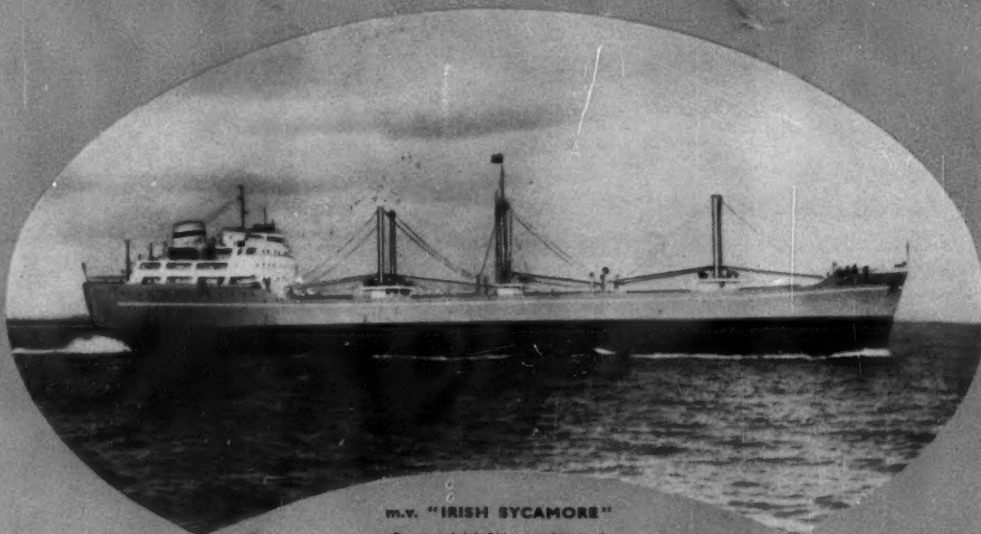
The SHIPPING WORLD



VOL. 145 No. 3554

20 SEPTEMBER 1961

Price 2s.



M.V. "IRISH SYCAMORE"

Owners: Irish Shipping Limited.
Builders: Wm. Gray & Company Limited.
Engines: Gray-Douford.

PERFECTLY LUBRICATED BY



ANTI-WEAR & ANTI-CORROSION OILS

CASTROL MARINE OILS

HELLENIC SHIPYARDS

PIRAEUS (Skaramanga)

- ★ MACHINERY AND HULL REPAIRS : SURVEYS
CONVERSIONS : DRY-DOCKING
- ★ CONSTRUCTION OF ALL TYPES OF VESSELS
UP TO 650 FT. IN LENGTH AND 32,000 D.W.T.
- ★ FLOATING DRY-DOCKS

No. 1. Length 694 ft. Breadth inside walls 121 ft. Lifting Capacity
26,000 tons. Docking Vessels up to 50,000 D.W.T.

No. 2. Length 673 ft. Breadth inside walls 104 ft. Lifting Capacity
22,000 tons. Docking Vessels up to 40,000 D.W.T.



Motor Tanker "WORLD HOPE" (24,700 d.w.t.) built by Hellenic Shipyards at Skaramanga.

Conveniently situated on the main shipping lanes through the Mediterranean. Fully equipped with the most modern installations for all types of shipbuilding and ship-repair work.

Registered Office: **HELLENIC SHIPYARDS CO. LTD.**

4, Acadimias Street, Athens, Greece

Cables: SHIPYARD ATHENS

Telex: ATHENS 123

Telephone: ATHENS 611-141

YARD: Skaramanga, Eleusis Bay, Near Piraeus, Greece

Telex: ATHENS 96

Telephone: ATHENS 073-471 (9 lines), 073-351 (10 lines)

U.K. Agents: HELLENIC SHIPYARDS (LONDON) LTD., 41/43 PARK STREET,
LONDON, W.1

Cables: SHIPNIAR LONDON

Telex: LONDON 28561/2

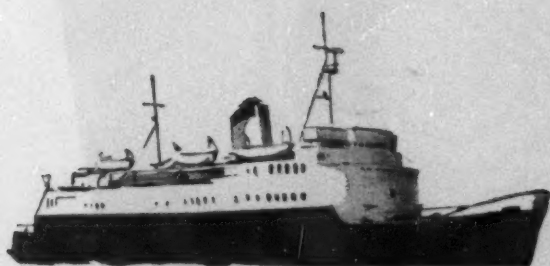
Telephone: MAYfair 8400

U.S. Agents: TRANSOCEANIC MARINE INC., 39 EAST 51st STREET,
NEW YORK 22, N.Y.

Cables: TROCEANIC NEW YORK

Telex: NEWYORK 4042

Telephone: MURray Hill 8-7070



latest channel ferries fit Decca TM969

the most advanced radar in the D11 range

CAESAREA • SARNIA • Where the highest safety standard must be provided in ships maintaining regular, fast schedules in crowded waters under all weather conditions, only the best equipment will suffice—British Railways have selected the Decca TM969 for Caesarea and Sarnia.

This equipment is the most advanced true motion radar in the world and embodies every modern refinement including INTERSCAN for very rapid range and bearing measurement.

DECCA RADAR

DECCA RADAR LIMITED LONDON ENGLAND

**DAMAGE - MAINTENANCE -
RE-CLASSIFICATION AND
RE-CONDITIONING
WORKS**

OARN

OFFICINE ALLESTIMENTO E RIPARAZIONI NAVI

GENOA

CABLES : MOLOGIANO

Telephones : 292.541 - 206.744 - 295.540



Sole agent in Great Britain : **GUEST INDUSTRIALS LIMITED**

5, Fenchurch Street, London, E.C.3. Tel : Mansion House, 5631. 'Grams : Guestind, London.



AF 184

**UNIVERSAL
WIDE FLANGE
BEAMS WITH
PARALLEL
FLANGES AND
UNIVERSAL
COLUMNS**

ARE NOW IN PRODUCTION AT
APPLEBY-FRODINGHAM AND THE FULL
RANGE WILL BE AVAILABLE SHORTLY.
BEAMS From 24" x 9" down to 8" x 5½"
COLUMNS From 12" x 12" down to 6" x 6"
INQUIRIES WILL RECEIVE IMMEDIATE
ATTENTION.

Appleby-Frodingham Steel Company SCUNTHORPE LINCOLNSHIRE

THE UNITED
STEEL
COMPANIES LTD

A branch of The United Steel Companies Limited

a design in light for Canberra comfort

Canberra—world's most revolutionary passenger liner—Canberra—P & O's proudest vessel built by Harland & Wolff Ltd. and taking leadership for Britain onto today's high seas. Leadership in lighting . . . for G.E.C. in co-operation with Britain's leading interior designers Sir Hugh Casson, with Timothy Rendle; John Wright, with Frederick Hickman, and Miss Barbara Oakley have produced the most brilliant and varied lighting installation ever created for a ship at sea.

Throughout the Canberra, in the scores of public rooms and in every cabin, specially designed G.E.C. fittings (nearly 20,000 of them) with Osram lamps and tubes evoke practically every mood—from joyous gaiety to subtle restraint. A lighting tour de force by any standards.

You can have the same high standards for your next lighting installation by asking the G.E.C. to plan it for you.



Play never stops for bad light in the Cricketers' Tavern which has G.E.C. lighting as do all the other Canberra public rooms.

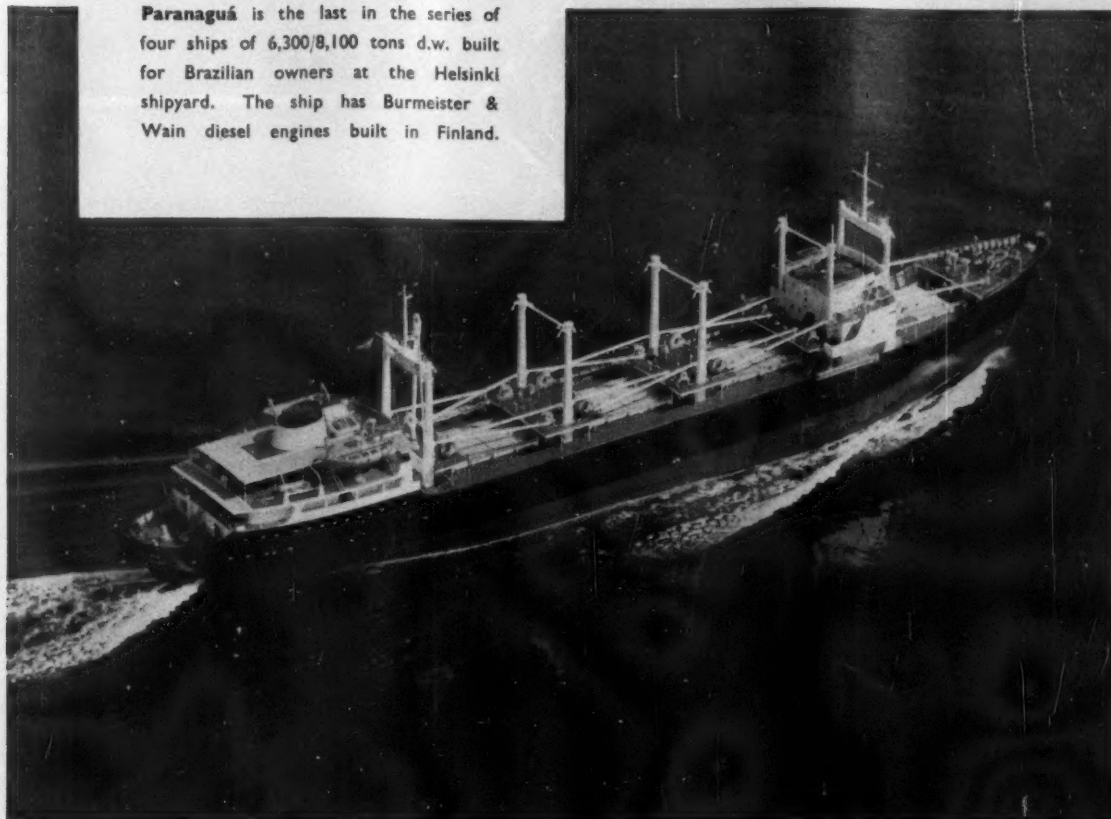
G.E.C. also supplied this other equipment for the Canberra:

Manual Fire Alarm System	Mutac Clipper Switches	Group Starter Boards
Luminous Call System	Alternators	Remote Control Units
500 line two position Manual Switchboard	Marine Motors and other ancillary equipment	Pirelli-General Wiring Cable
and 200 line Automatic Exchange		
Telephones		



THE GENERAL ELECTRIC CO. LTD., MAGNET HOUSE, LONDON, W.C.2

Paranaguá is the last in the series of four ships of 6,300/8,100 tons d.w. built for Brazilian owners at the Helsinki shipyard. The ship has Burmeister & Wain diesel engines built in Finland.



FAMOUS FINNISH SHIPBUILDING

THE BUILDING FACILITIES OF OUR HELSINKI SHIPYARD AND PANSIO SHIPYARD ARE

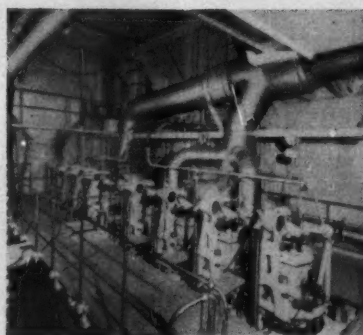
- one berth for ships up to 7,000—8,000 tons d.w.
- two berths for ships up to 5,000—7,000 tons d.w.
- two berths for smaller ships
- one dry dock for ships up to 4,000 tons d.w.

THE REPAIR FACILITIES OF THE SHIPYARDS ARE

- one dry dock 390 x 65 x 21 ft.
- the biggest floating dock in Finland
- with a lifting capacity of 5,000 tons
- floating cranes of 50 and 30 tons



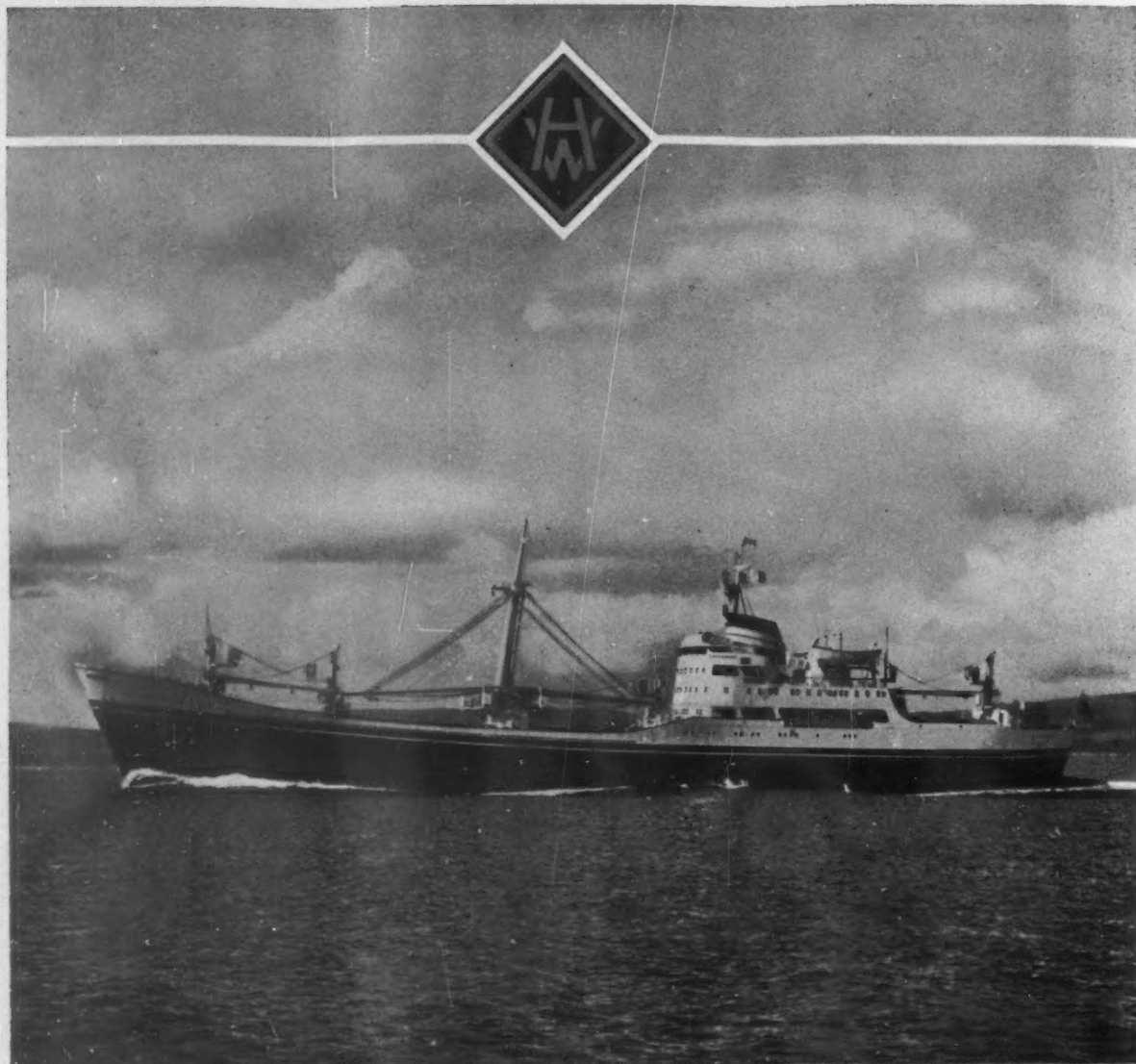
Valmet Oy - Helsinki - Finland - Telex: Helsinki 12-427



B & W Licensed manufacturers of Burmeister & Wain marine diesel engines in Finland



Our up-to-date shipyards and experience are at your service



H&W

HARLAND AND WOLFF

SHIPBUILDERS · SHIPREPAIRERS · ENGINEERS

BELFAST GLASGOW LONDON LIVERPOOL SOUTHAMPTON

M.V. "BARPETA"

(British India Steam Navigation Co. Ltd.)

Third of a group of five similar motor cargo vessels of 7,500 deadweight tons each, ordered from Harland & Wolff by these Owners. The propelling machinery is a 6-cylinder H & W - B & W 2-stroke opposed-piston engine.

Sole Licensees for propelling Engines on the **B&W** system for the British Commonwealth and Empire

The SHIPPING WORLD AND WORLD SHIPBUILDING

The Oldest Weekly Journal devoted to Shipping, Shipbuilding,
Marine Engineering, Shiprepairing, Aviation and Finance

FOUNDED



1883

Chairman of The Shipping World Ltd: F. D. H. BREMNER

Editor: PETER DUFF

Associate Editor: IAN BREMNER

Advertisement Manager: W. MURRAY

Annual Subscription £5

Offices: 127 Cheapside, London EC2

Telephone: Monarch 2801

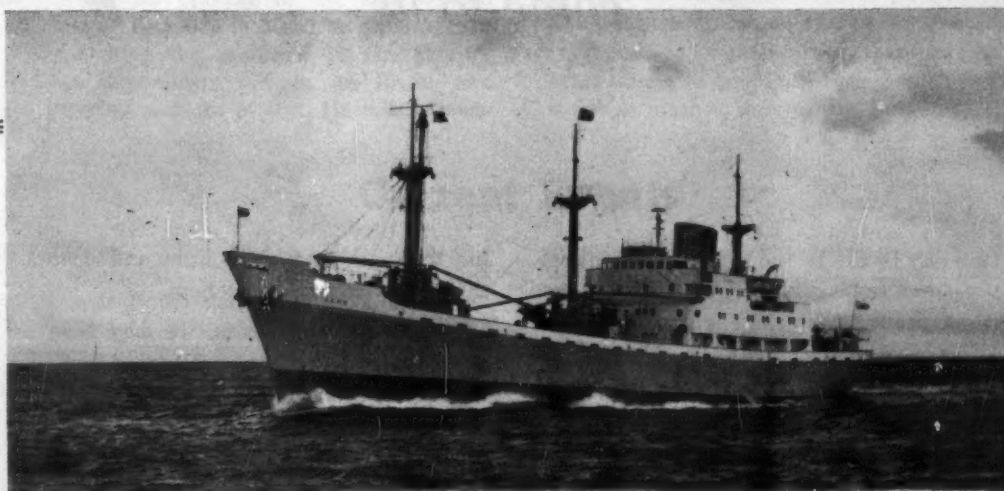
Telegrams: Shipping World, London

Vol. 145

20 SEPTEMBER 1961

No. 3554

Marples' Mission	217	News from Overseas	229
Current Events	217	Russian Hydrofoil Craft	230
On the "Baltic"	220	The Bulk Carrier J. Louis	231
The Carriage of Boscan Crude	221	Recent Publications	232
Sjofart 61	224	Solventless Epoxy Coating	233
Some Aspects of Automation in Ships—II	225	New Contracts, Launches, Trial Trips	234
Oil Topics	228	Maritime News in Brief	235
Recent Ship Sales	228	Fifty Years Ago	236



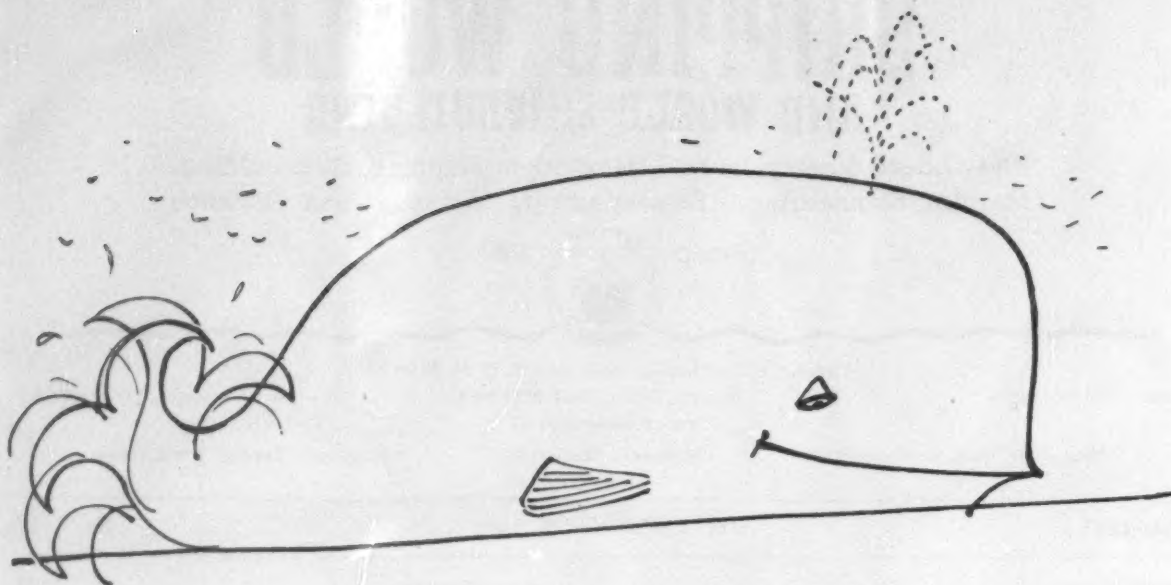
M.V. "AARO," built for Ellerman's Wilson Line Ltd., for their London and Copenhagen passenger and cargo services.

HENRY ROBB LIMITED

London Office:
49 Leadenhall St., E.C.3
Phone: ROYal 4364

VICTORIA SHIPYARDS
LEITH :: SCOTLAND

Telegrams:
"Repairers, Leith."
Telephone: Leith 36881/4



*Wise people in whaling
come to us*



One day in the late autumn of every year, the pop of an invisible starter's pistol echoes silently round the world. Then from countries as far away from each other as Norway and Japan, the whaling fleets slip out in the early morning and steam South. They follow the longitudes, and eventually reach the ice floes of the Antarctic.

These fleets stay out for months at a time, and are quite self-contained. To survive, they need vast quantities of bunker and diesel

fuel to propel, heat, warm, light, and to work the factory ships and catchers.

To bunker these fleets, we may send a tanker load to rendezvous at some port half-way round the world. This is bunkering in the grand manner. At the same time, at the other end of the scale, we look after the fishing fleets in more homely waters. In the season, drifters cluster round our fuelling depots like cheerful urchins round an ice-cream kiosk.

YOU CAN BE SURE OF





THE SHIPPING WORLD

MARPLES' MISSION

"DO IT YOURSELF" has become a familiar tag in the postwar years, but "see for yourself" is an older one which is of more lasting importance as a principle; and it is this latter principle which Mr Marples, the Minister of Transport, has been following in his tour of European shipyards in Holland, Germany and Sweden. In the course of his visits to some of the main competitors of British shipyards he will have seen nothing that was not known before in Great Britain. But in seeing it all for himself he will have been able to make personal comparisons with what he saw during his earlier visits to British shipyards, and he will be better armed for the discussions with both sides of the British shipbuilding industry that will presumably follow, as well as for the introduction into Parliament of any measures that may be found necessary.

Mr Marples is sometimes classed by his political enemies as a showman. But when he first announced in public his intentions to come forward with proposals for shipbuilding after the Parliamentary summer recess (at the time of his opening of the reconstructed Kingston Yard of Lithgows in June) he made it clear that he was taking the problems of the industry seriously, and shipbuilders will see his British and European tours as evidence of this. He unfortunately

timed his return so as to preclude, by a matter of an hour or so, any mention in this leading article of what he said on his arrival at London Airport; but it is known that he was impressed by a great deal that he saw.

His task on his return will have been made easier by the publication, during his absence, of the long-awaited report of the British productivity team on shipbuilding in Sweden. This report, which was the subject of comment in *THE SHIPPING WORLD* last week, is notable as a document signed by trade union officials (including Mr Ted Hill) which recognises fully and fairly differences in shipbuilding practice between the two countries. Apart from one somewhat acid footnote by the trade union representatives on the subject of the interchangeability of labour, the report is unanimous. Although it is reasonable enough to express surprise at the very long time that the public has had to wait for the report, the delay may well prove to have been a cloud with a silver lining. It is doubtful if the degree of unanimity now achieved would have been possible of publication a year earlier, while the exact timing of publication suggests that Mr Marples is not so much a showman as a shrewd tactician.

Current Events

Shipyard Offices

IN AN article in *The Listener* Mr Ian S. Lloyd, economic adviser to a large British shipping group, has followed the current fashion of comparing the British shipbuilding industry with its European competitors, and the author has brought out some good points which deserve intelligent study. While not suggesting that fine headquarters produce good ships, for example, he points out the marked contrast between British and Scandinavian ideas of office quarters. He regards the head office in a modern shipyard as a much more important place than it was in the old shipyards. "Modern, clean, well lit and well situated buildings make a different impression from the dingy, drab and dark offices which reflect, at worst, a 'good enough' attitude on the part of management; at best, the 19th-century idea that money spent on good office accommodation is money wasted". The offices of some of the Swedish yards are outstanding examples of modern office architecture at its best, and give the impression that "the inhabitants are creatures of the 20th century rather than inheritors of the 19th". He goes on to say that this apparent difference in the

quality of office accommodation reflects a more important difference which has had a profound effect on development in the industry, for in Continental yards, particularly in Sweden, the ratio of staff to direct labour, and of professionally qualified staff to total staff, is generally much higher than in Britain. These, he feels, places the Continental yards in a far stronger position to interpret and apply the latest advances in the many technologies that are invading the industry, while in Britain there has been a failure to grasp that the key to the application of these techniques lies in human communication. "The capacity of a few people to appreciate the full significance of what is proposed is important but not critical. If the capacity to understand diminishes sharply a short distance from the top, the established order becomes almost immovable". Mr Lloyd feels that it is in the strength of what is generally termed "middle" rather than "top" management that the Continental builders have outstripped the parent industry in Britain, and the marked contrast between British and Continental shipyard offices may well be the outward symbol of this theory.

Cooperation with Shipowners

IN HIS *Listener* article Mr Lloyd regarded as encouraging the suggestion that a joint shipping and shipbuilding research organisation should be established in the near future. He thinks that the problem of assessing the future market for ships has largely fallen between the two schools of both industries, almost as much on the Continent as in Britain. Shipbuilders have in the main been content to build what the owners want when they want it; but the shipbuilder who can make a correct assessment of the future demand for ships can lay out his yard to produce such vessels more efficiently than others. But an incorrect assessment would be expensive, so that shipbuilders should benefit greatly from close cooperation with shipowners, especially if that cooperation is based on a well informed, objective and critical assessment of the future requirements of international seaborne trade. But much more than good forecasting is required. There is also the spirit of technological enterprise. "New types of vessel can create opportunities for new trades where none existed before. There is a rich harvest to be reaped in the development of methods of handling general cargo. All this will require a much more fundamental respect for the scientific method, in management as well as in the design department, a more professional approach to such matters as the measurement of productivity, economic forecasting, production planning and materials handling". Mr Lloyd concludes that the lesson of the shipbuilding industry is surely that in the 20th century the diffusion and development of technology can rapidly erode the secure protection which a firm, an industry, or even a nation's economic system has derived from custom, tradition, reputation and sentiment".

Three Generations of Shipbuilding

A PICTORIAL history has been issued by the Newport News Shipbuilding & Dry Dock Company to celebrate its 75th anniversary, for the shipyard was incorporated, as the Chesapeake Dry Dock & Construction Company, on 28 January 1886. Well known as the builders of the *America* and *United States*, as well as of major warships, the yard led all of the world's shipyards in deadweight tonnage completed during the year 1954; and in that year also the company established its Atomic Power Division. Like most other shipyards, however, it has also known hard times, for it is recorded that in April 1895 a contract was received for the passenger ship *La Grande Duchesse*; and "because of the competition for the work, it was said there would be no money in the job for anyone". During that year the founder, on a trip to England, attempted to sell the shipyard to "an English capitalist", apparently unsuccessfully. Conditions at about the turn of the century were bad enough to prompt him to write: "There is something that is fearfully wrong; in fact, so wrong that I am afraid to take any more work until we have reached a point where we can get as much to build a ship as it costs to build it". Again during the lean years of the 1920s the yard embarked on a profitless yacht-building programme, the first of the series showing a 21 per cent loss to the yard. Despite its ups and downs, and there have been more of the former than the latter, the yard has remained true to its founder's motto, which is prominently displayed on a plaque:

WE SHALL BUILD GOOD SHIPS HERE
AT A PROFIT IF WE CAN
AT A LOSS IF WE MUST
BUT ALWAYS GOOD SHIPS

Building Without Profit

MANY shipbuilding establishments today are quoting prices which are bound to show them a loss, merely to keep their labour force and equipment turning over; and others are engaging in different types of employment for the same reason. One British shipbuilding firm, however, has taken a stand against the idea of building without profit. The West Hartlepool Shipbuilding and repairing firm of William Gray & Co Ltd, who are now without new orders, hope to maintain their labour force of 1,400 men by concentrating more on repair and general engineering work. The firm will build new ships if orders are forthcoming, but no further orders will be accepted at uneconomic prices. At present the firm has orders worth £750,000, sufficient to maintain production until the end of the year. These include two major ship conversion jobs and orders for 19 boilers and other equipment.

Old Ships for New

A RECENT transaction reported from Swedish sources involves the sale of two 5,900-dwt postwar motorships to buyers in Yugoslavia, with the money realised to go towards the cost of a 24,000-dwt bulk carrier which is to be built for the Swedish firm in a Yugoslav shipyard. Unfortunately as yet there is no indication from Sweden of the price realised on the sale of the two ships, the *Ada Gorthon* and the *Stig Gorthon*, which were built and engined at the Kockums yard in 1945 and 1946 respectively. They are strengthened for navigation in ice, and their Kockum-M.A.N. oil engines give them a speed of about 15 knots. They also have accommodation for four passengers. The sellers in each case are companies managed by Mr Stig Gorthon, of Helsingborg. Nothing is known as yet about which Yugoslav shipyard is to build the big bulk carrier. This is not the first time that Yugoslav buyers have bought vessels on a part exchange basis in association with domestic shipyards towards the cost of new vessels. Earlier in the year (SW, 12.4.61) two Liberian steamers, the *Tern* and the *Brant*, were sold to such buyers, towards the cost of a 22,000-dwt bulk carrier building at Split. Last year (SW, 6.4.60), three Liberty vessels, the *Aspirator*, *Gladiator* and *Navigator*, were sold in the same direction as part payment for a 15,000-dwt closed shelterdeck motor vessel, building at Rijeka at the yard of Brodogradiliste "III Maj." Obviously in all these cases the work given to Yugoslav shipyards has been reflected in the value placed on the secondhand ships.

Swedish Ships on Charter to Cunard

FOLLOWING the announcement that they had sold the passenger liners *Media* and *Parthia*, Cunard last week stated that the cargo service formerly operated by these two vessels would in the future be maintained by the *Nordia* and *Maronia*, two new vessels being built in Sweden for Swedish owners. Unlike the *Media* and *Parthia*, each of about 13,350 grt, which carried both passengers and cargo, the two Swedish ship which Cunard have chartered will carry only cargo. Together with the *Sylvania*, 21,989 grt, and the *Eva Jeanette*, 2,761 grt, also Swedish, the new ships will maintain Cunard's weekly service between Liverpool and New York, sailing every Friday, permitting discharge in New York on the Monday week. The *Sylvania* will then be the only passenger ship in the quartet and she sails in the Liverpool-Cobh-New York service. She is, of course, also arranged for carrying cargo. The *Nordia* will make her maiden voyage from Liverpool on October 6. Her deadweight is 6,000 tons and the bulk capacity of 315,000 cu ft includes 24,000 cu ft of refrigerated space. The *Maronia* is

similar in design to the *Nordia* and is expected to make her maiden voyage on November 17 from Liverpool. Both ships will have 30-tons heavy-lift derricks. By chartering these two new Swedish vessels Cunard have ensured that their weekly cargo service between Merseyside and New York will be continued.

Clyde Trust as Airport Managers

THE possibility that the Clyde Navigation Trust may be authorised to operate Glasgow's airport was indicated at the annual inspection of Trust properties on September 13. The Government has proposed that the four airports in Scotland (omitting Prestwick, which will have international status) will be operated eventually by the local authorities. Glasgow Corporation has not shown any major enthusiasm at the prospect of accepting such a responsibility; there are indeed views that the city will not want to be saddled with the operation of an airport. The Trust would be an admirable body, in the viewpoint of many in Glasgow, to take over the responsibility which the city does not want and is indeed unfitted to handle. That the Trust will not be averse to such a scheme was indicated by Mr J. R. Proudfoot, general manager, who said that the example of the New York Port Authority operation of New York's airports was an indication of such coordination. The Trust has made preliminary approaches to the Government and these have been received well. The Trust is also a non-profitmaking organisation, is adjacent to the new airport development site at Abbotsinch, and would seem to be a potential link between shipping and air transport. The Trust has not yet considered the project formally, but from the advance moves it would seem a reasonable assumption that some close link between the Clyde Trust and the airport undertaking might well emerge. Another development noted on this occasion was the purchase of 100 acres of ground on the Blytheswood Estate on the Clyde which will provide a replacement for any deep-water berthage lost by changes which may be pending on the upper reaches of the river to meet town redevelopment plans.

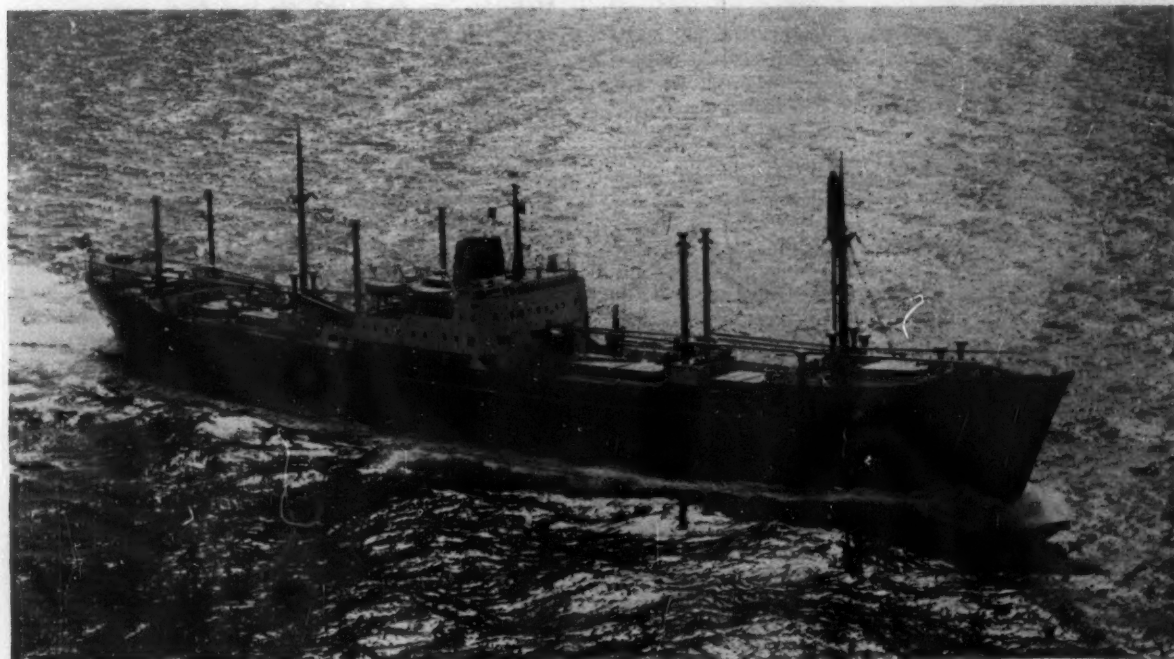
When is a Ship . . . ?

JARROW Corporation Health Committee has been informed that it would be difficult to bring a successful prosecution against the owners of a ship giving off smoke while lying in dry dock. Dealing with the Clean Air Act, the Deputy Town Clerk (Mr C. H. Driver) stated that a ship was not classified as a ship unless it was in navigable waters. On the other hand, it was not considered a building while in dry dock, and its funnel could not be classed as a building chimney.

Life Begins at 40 !

THE passenger liner *Nassau*, 15,043 grt, built as long ago as 1923 by Sir W. G. Armstrong Whitworth & Co Ltd, Newcastle, has arrived in the Clyde for an extensive refit at the Govan shipyard of the Fairfield Shipbuilding & Engineering Co Ltd. Built as the *Mongolia* for the P & O Line's Australian service, she was chartered to the New Zealand Shipping Co Ltd in 1938, renamed *Rimutaka*, and did service for that company until 1950. She was sold by the P & O in that year to her present owners, the Ingres Steamship Co Ltd, and underwent an extensive refit at Genoa in 1951. She entered the cruise trade from New York to the Bahamas after a year in the North Atlantic trade as the *Europa*. During the last year or so her two masts were removed and replaced with a light mast rising from the bridge as well as other alterations. She normally operates with the liner *Victoria*, better known as the former Union-Castle liner *Dunnottar Castle*, which the Ingres Nassau Line purchased in 1958. Unconfirmed reports state that after her present refit the *Nassau* will be operated by a Mexican company, the Nav. Turistica Mexicanos S.A. In her present guise the *Nassau* boasts two swimming pools, full air conditioning and high grade accommodation for 617 first-class passengers.

SUN ON THE SEA: A study of the "*Ragna Bakke*", 11,050 dwt, owned by Skibs A/S Pacific (Knut Knutsen O.A.S.), Haugesund. Her sister ship "*Martha Bakke*" was described in our issue of 14 September 1960



ON THE "BALTIC"

ACTIVITY OF TANKERS IN THE GRAIN TRADES

By BALTRADER

SHIPOWNERS have had little cause for complaint on the freight market in recent weeks, but rates have lately become somewhat patchy and a lot has often depended on a vessel's readiness dates. Prompt ships on this side have generally scored, but in the Far East it has often proved a disadvantage to be too early, and at this moment there are many unfixed ships on passage in ballast from Japan with orders to head for Panama. No doubt they will secure satisfactory cargoes from the U.S. Gulf area back to Japan, but nevertheless a situation such as this is not without its danger for shipowners.

In the trans-Atlantic trades the feature continues to be the activity of grain-carrying tankers, and recent fixtures from the U.S. Gulf to Holland or Belgium at \$5 f.i.o. and more were at least \$1.50 up on the rates current for similar business in the early part of July—a useful premium for a vessel whose carrying capacity may well exceed 20,000 tons. As always, of course, this lively fixing of tankers has been small consolation to dry-cargo shipowners who have seen vast quantities of grain disappearing before their very eyes. Rates for the conventional dry-cargo ship have also improved in the trans-Atlantic trades in recent weeks, but current inquiry appears to be somewhat sparse and Churchill requirements, for example, are virtually covered for this year. Naturally owners are hoping for an active late season St Lawrence inquiry, and there is still plenty of time for this to develop, for there are a full two months of normal navigation ahead before the winter closes in.

Renewed Interest in Hampton Roads Coal Trade

In recent years the coal trade from Hampton Roads to the near Continent has been reduced to negligible proportions, at least in so far as inquiry on the open market is concerned. Lately, however, a number of fixtures have been reported and no doubt this is at least partly due to the fact that fewer car-carrying ships are available for return coal cargoes. When the car trade from Europe to the United States was at its height many of the contract ships involved favoured quick coal cargoes back to Europe. In fact, of course, they still do, but their numbers have diminished as a result of the falling off in demand in North America for European car imports.

Apart from occasional cargoes to Japan and other Eastern destinations, sugar chartering from Cuba has not been a feature of the markets lately. China, for example, took a great many ships for Cuban sugar in the first half of the year, but has not been quoting now for some time, although Russian charterers could take tonnage for the Black Sea. Scrap charterers have recently succeeded in stabilising rates from the U.S. Gulf and U.S.N.H. to Japan and this is no doubt due to the procession of ballasters across the North Pacific from the Far East, a phenomenon which has already been referred to.

Needless to say, the general exodus from the Far East across the North Pacific is not a move of desperation on the part of owners, but merely a calculated attempt to secure better rates from such areas as the U.S. Gulf by producing fairly prompt ships. The risk, of course, is that too many owners will play the same game and that charterers will see an opportunity to depress rates, but even if this happened it would not necessarily be a disaster for owners, for current eastward rates are substantially higher than they have been for

several years. The main point of interest in the Far East continues to be the congestion in Japanese ports, and there is no doubt at all that the heavy delays suffered by hundreds of ships have had a substantial effect on the freight markets as a whole. Many owners, especially those with low-valued ships collecting high rates of demurrage, have been quite content to spend a month or two more than expected in Japanese ports, but it has often been difficult for an owner to obtain accurate enough discharge prospects for him to fix for follow-on business. This is another good reason why many ships have been ordered to proceed across the North Pacific in ballast, for this has given the owners concerned a breathing space in which to arrange further employment.

The Freight Markets

There was no very special feature of the freight markets last week but rates generally showed little change. There was less activity in the trans-Atlantic grain trades but this was not surprising in view of the many tanker fixtures in the previous week. However, the *Iolcos* an 18,000-tons tanker was fixed with heavy grain from the U.S. North of Hatteras to the Turkish Mediterranean at \$8 free discharge, September 15/30, and another tanker fixture was that of the 29,000-tons *Atlantic Unity* with heavy grain from the U.S. Gulf to Antwerp, Rotterdam or Amsterdam at \$5 f.i.o., option Antwerp/Hamburg range discharge at \$5.25, October 18/31. An interesting fixture was that of the tanker *Skogaas*, an 18,000-tons vessel, for seven consecutive grain voyages from the U.S. Gulf to Antwerp, Rotterdam or Amsterdam at \$4.50 f.i.o., commencing November 1/20. A normal dry-cargo vessel was fixed with heavy grain from the Great Lakes to Hull at 88s 6d, St Lawrence completion at 48s 6d, October 25/November 20.

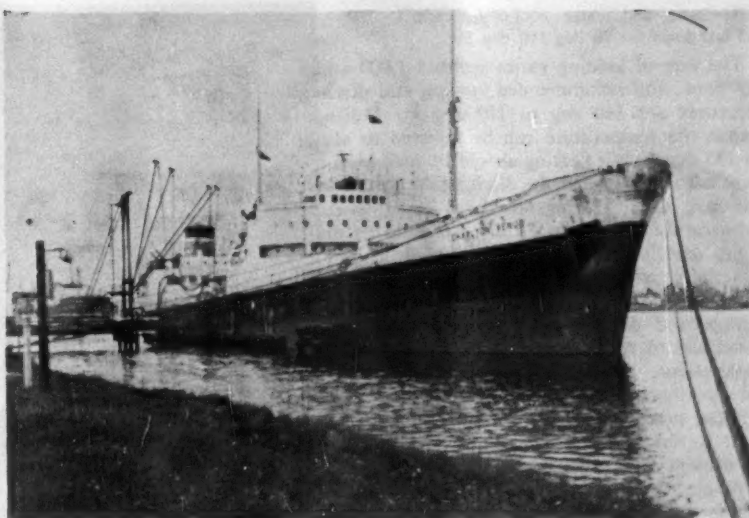
The South African market was quiet but the *Mount McKinley* was fixed with pig iron from Beira to Japan at \$9.55 f.i.o. for November, and there were several Mauritius sugar fixtures including a November ship to London, Liverpool or Greenock at 67s 6d. There was more Australian grain fixing to the U.K. including *Ayia Markella* with bulk wheat ex silo from West Australia to U.K./Dublin at 77s 6d, option London discharge at 75s, Antwerp/Hamburg range at 72s 6d, October 10/November 10. The *Romanby* takes a similar cargo from the same area to the Spanish Mediterranean at 62s 6d free discharge, option Spanish Atlantic at 65s, September 25/October 16. On the North Pacific grain charterers were able to secure cheaper tonnage for early loading to Japan and fixtures included *Leros* with wheat at \$6.45 free discharge, September 28/October 10, but for later loading a Livanos vessel was fixed for similar business, two consecutive voyages at \$7.50 free discharge, commencing November 20/December 31. The *Stavros*, 9,500 dwt for cargo, 475,000 cu ft bale, was fixed with scrap from California to Japan at \$80,000 f.i.o., September 25/October 10. Early in the week the *Apollon* was fixed with wheat from the North Pacific to East Coast India at 66s 3d free discharge, September 12/25.

The timecharter market was rather quiet but fixtures included *Tento* (ms), 8,875 dwt, 478,000 cu ft bale, 14½ knots on 17 tons diesel oil, at 26s per ton, delivery Rotterdam, 6 months trading with charterers' option of a further 6 months, September 22/23.

The Carriage of Boscan Crude

ANOTHER UNUSUAL CARGO
FOR THE "CHARLTON VENUS"

By J. H. Clarke,*
M.I.Mar.E., M.R.I.N.A.



WITH the advent of 1961, as a consequence of the prevailing shipping recession rates, especially in the carriage of petroleum crudes and refined products, tanker owners were obliged to explore markets with a view to carrying cargoes which previously were either not considered economically suitable for transport in their ships, or alternatively to carry cargoes for which oil-carrying vessels were never intended. See *SW*, 19.11.58; 28.10.59; 1.6.60; and 11.1.61.)

The author was requested by his principals, the directors of Chandris (London) Ltd, managing agents for the Charlton Steam Shipping Co Ltd, to investigate the possibility of carrying a cargo of "Boscan crude" from Maracaibo, Venezuela, to Ostermoor, Germany, in their *Charlton Venus*, a 16,700-dwt tanker built by Wm. Doxford & Sons Ltd in 1951. This vessel had previously carried most of the petroleum crudes and refined spirits, wine, grain and molasses. The ship has 27 cargo tanks, numbered 1 to 9 port, centre and starboard. Nos 1 to 9 centre tanks and No 9 port and starboard tanks had been coated with British Paints Epilux 4, an epoxy resin paint, in 1958. Aluminium brass heating coils had earlier been installed in all cargo tanks, the installation consisting of 20,996ft of 1½-in bore aluminium brass piping giving a heating surface of 1 sq ft per 80 cu ft of cargo tank capacity. Cargo pumprooms are located between Nos 2 and 3 tanks and Nos 6 and 7 tanks.

This vessel is propelled by a 5-cylinder Doxford engine of 6,400 bhp and fitted with two Scotch marine type boilers, three furnaces each, working pressure 150 lb/sq in, saturated steam, forced draught, oil-fired with alternative exhaust gas to the wing furnaces. Total heating surface is 5,100 sq ft, and total evaporation 30,000 lb/hr.

After due investigation, and confirmation that the vessel could carry the cargo satisfactorily, the owners' chartering department chartered out the ship to transport about 16,300 long tons of Boscan crude from one or two ports in the Caribbean Sea including Lake Maracaibo, Venezuela, to one or two ports in the U.K. and/or Continent. The terms of the "Essovoy" charterparty included the following:—

- (a) Lay days 7 April 1961. Cancelling 17 April 1961.
- (b) Total laytime 144 hours (includes loading and discharging times).
- (c) If cargo heated in excess of 135 deg F, increase in rate.
- (d) Vessel capable of heating cargo to 160 deg F.
- (e) Tanks to be absolutely dry prior to loading.

* Mr J. H. Clarke is marine superintendent engineer for Chandris (London) Ltd.

Cargo

Boscan crude is an asphalt-based crude oil obtained from the Boscan oilfields near Maracaibo, Venezuela. This crude oil when processed gives approximately 80 to 85 per cent asphalt, which is mainly used for the surfacing of roads, but is also used in the manufacture of roofing materials and composition floorings for buildings, as well as the production of certain types of insulation for electrical cables and equipment.

The Richmond Exploration Company, which is a subsidiary of Standard Oil Company of California, handles the transportation of the crude. This is pumped through a pipeline 24 miles long from the Boscan oilfields to their loading terminal at Bajo Grande, situated on the west side of Lake Maracaibo, about 8 miles from Maracaibo, and subsequently loaded into the ocean-going tankers. The company also acts as agents for vessels loading at their terminal.

Tankers load from a berth located about 1½ miles from the shore, the cargo being loaded through two 18-in diameter submarine pipelines. Depth of water at this berth is about 34ft.

Discharge of Ballast Prior to Loading

Vessels must arrive alongside with only clean water on board, and this is discharged overboard into the lake when the vessel is safely moored. Heavy penalties are imposed for discharging oil into the lake. It is important that all cargo tanks are dry and pipelines drained before loading as water does not separate readily from this type of oil. For every 4.10 per cent contamination by sea water the salt content of the crude is increased by approximately 0.00286 per cent (say 10 lb salt to every 286 tons of cargo).

Characteristics of Boscan Crude

Specific gravity at 160 deg F = 0.9975 = A.P.I. 10.3 = S.G.1.0013 at 60 deg F.
Weight = 62.1325 lb/cu ft at 160 deg F = 348.911 lb/barrel.
Stowage = 36.052 cu ft/ton at 160 deg F = 6.4199 barrels/long ton.
Pour point = 50 deg F.
Viscosity Saybolt Furol 1400 seconds at 140 deg F = 12,222 secs Redwood No 1.
Viscosity Saybolt Furol 600 seconds at 160 deg F = 5,283 secs Redwood No 1.
Sulphur weight = 5.39 per cent.
Wax = 1.0 per cent.

Sediment and water = 1.0 per cent.
Flashpoint = 90 deg-110 deg F.

The rate of loading varies between 1,000 and 1,600 tons per hour, and recommended loading and discharging temperatures are 160 deg to 170 deg F. During an ocean transit the temperature can be lowered to about 130 deg to 135 deg F, but heating should be increased about 6 to 7 days before arrival at the discharging port, allowing 5 deg rise per day. During discharge it is essential that a temperature of 165 to 170 deg F should be maintained.

Sea and air temperatures, as well as sea conditions, materially affect the amount of heating required. To maintain the recommended temperatures throughout the voyage and during the discharge of cargo offers many difficulties to vessels not equipped with large steam raising installations. In the case of modern motor vessels with only auxiliary boilers, and especially if steam driven independent pumps are fitted in the engine room, great care must be taken by the ship's personnel to ensure correct adjustment of cargo heating arrangements. Turbine or turbo-electric ships of the T2 type or similar are better equipped for this type of cargo, having watertube boilers of adequate size and evaporation with adequate reserve

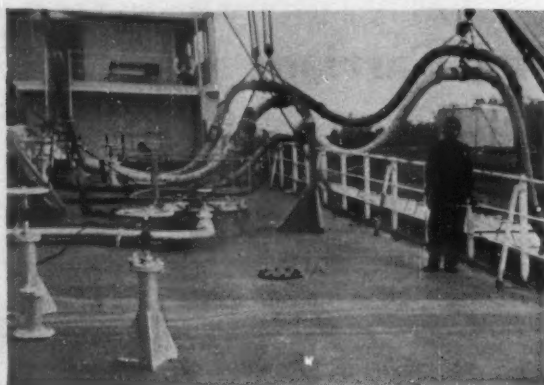
Cargo Loaded

Tanks	Port	Long Tons	Starboard
No 1	---	---	---
No 2	---	---	---
Pumproom	---	---	---
No 3	---	---	---
No 4	---	---	---
No 5	---	---	---
No 6	---	---	---
Pumproom	---	---	---
No 7	---	---	---
No 8	---	---	---
No 9	---	---	---
Total	Port 4,051.7 Scbd. 4,061.3 Centre 8,106.1	8,106.1 Draught: fwd 30ft 0in aft 30ft 4in mean 30ft 2in	4,061.3 598.2 980.6 984.6 986.8 983.7 446.2 982.6 985.8 847.6
Total Cargo Loaded	16,219.1		
Loading temperature:	160°F		
Atmospheric temp.	96°F		
Sea temperature:	88°F		
	S.G. 0.9975 at 160°F		

LOADING COMMENCED 0610 hrs 12 April 1961.
LOADING COMPLETED 1650 hrs 12 April 1961.
LOADING TIME 10 hr 40 min.
AV. RATE OF LOADING: 1,570 tons/hr.



Pouring Boscan crude at a temperature of 100 deg F.



Ship's pipeline connection for discharging Boscan crude

steaming power available, in the order of working pressure 450 lb/sq in, total heating surface 16,290 sq ft and evaporation 65,000 lb/hr.

Some tanker owners have found from experience that it is preferable to load this type of cargo only in the centre tanks, as the dissipation of heat is not so great there as in the wing tanks, where the ship's side is in contact with the sea water.

Voyage from Las Piedras, Venezuela to Ostermoor, Germany:

Sailed from Las Piedras noon 14 April 1961.

Total distance Las Piedras to Ostermoor 4,629 miles.

Average ship's speed 12.69 knots.

Average daily fuel consumption:

(a) Without cargo heating—

Main engines—diesel oil	= 18.7 tons
Boilers—boiler oil	= 5.0 "
Total	= 23.7 tons

(b) Normal fuel oil cargo heating

Main engines—diesel oil	= 18.7 tons
Boilers—boiler oil	= 8.8 "
Total	= 27.5 tons

(c) Boscan crude cargo heating

Main engines—diesel oil	= 18.7 tons
Boilers—boiler oil	= 12.8 "
Total	= 31.5 tons

N.B.—Cargo heating will depend on atmospheric and sea temperatures also on grade of fuel. If rough seas breaking over vessel with decks awash greater heating will be required.

Cargo heating was maintained at 135 deg F during the voyage. Increased heating began 6 days before arriving at Ostermoor.

Arrival at Ostermoor, Germany

Vessel arrived at anchorage River Elbe 0230 hrs 30 April 1961.

Vessel moved alongside Ostermoor, began discharge 1800 hrs/30 April 1961.

Vessel completed discharge including draining of tanks 20.00 hrs/3 May 1961.

Total time for discharge—74 hours.

Average rate for total discharge including draining—
219.2 tons/hr.

On the great
sea routes
of the world
ships are
bunkered by



*Caltex bunker oil facilities,
lubrication and technical services
are available at all
the principal ports on the great
sea routes of the world.*



Systemize your paperwork with a

Thermo-Fax

'BLACK HEAT' COPYING MACHINE



It's 'Black Heat'—invisible, low-frequency heat waves—that gives a *Thermo-Fax* Copying Machine phenomenal speed and cleanliness. And 'Black Heat' enables it to go far beyond simple copying and do a host of other time- and labour-saving jobs.

Thanks to 'Black Heat', *Thermo-Fax* Copying Machines are perfectly clean and perfectly dry. They copy almost

any page up to brief size, written or typed, printed or drawn, in 4 seconds flat. More. In 4 seconds they produce an itemised, addressed statement that needs no checking. Or 39 labels on perforated, *gummed* paper, because 'Black Heat' works without messy chemicals, fluids or powders.

No wonder go-ahead offices are taking over 1,000,000 *Thermo-Fax* copies per day!

Thermo-fax

REGD. TRADE MARK

THE ONLY 'BLACK HEAT' COPYING MACHINES

A Thermo-Fax copying machine produces

a statement, 39 gummed labels, a 'Short note reply, a receive note

reproduces

an enquiry, a quotation, a specification, a legal document

and hundreds more **IN JUST 4 SECONDS**



'Thermo-Fax' is a trade mark of the Minnesota Mining & Manufacturing Company

MINNESOTA MINING & MANUFACTURING CO. LTD.

3M House, Wigmore Street, London, W.1.

Please send details of the Thermo-Fax all-electric, all-dry copying machines.

NAME

POSITION

COMPANY

ADDRESS

SW6



Cooling racks for bagged asphalt

At Ostermoor, the vessel was moored alongside a jetty. The diameter at the shore pipeline is 14in and the distance to the storage tanks about 656 yards (600 metres). Once cargo discharge is started it is important for the crude to be kept moving, maintaining a temperature at the ship of 165 to 170 deg F. If this temperature falls appreciably the crude becomes so viscous that it will not move in the pipeline and a complete stoppage results.

It has been found from experience that once a tank is being discharged pumping must be continued until the tank is completely drained, otherwise the crude will solidify on the bottom of the tank and in the suction valve strums. As the level of the liquid is lowered the pump speed should be reduced or the crude may become vapourised, causing gas locks in the chambers of the pumps. While one pump is draining a tank another pump is started on the discharge of a full tank. Two 8-in flexible discharge hoses were connected to the ship's pipelines, these hoses being connected to the 14-in shore pipeline. As the cargo tanks were being discharged the steam was shut off the empty tanks. During the discharge only the tank ullage plugs were open for inspection, so as to conserve the internal heat and avoid fire risk.

It is essential that two wing tanks, one each port and starboard, are kept full for listing the ship during draining operations. Depending on the trim of the vessel and local circumstances, it is advantageous to discharge the wing tanks first, except for the trimming tanks. The centre tanks retain the heat longer, due to the insulating effect of the wing tanks, while the wing tanks lose heat through shell radiation.

Tank Cleaning

It is essential to wash the tanks with hot salt water, using the Butterworth machines, before placing any cold ballast water inside. These machines should be operated with a minimum water pressure of 160 lb/sq in and a temperature of 170 deg F. The machines should be lowered to the bottom of the tank and operated for one hour, then raised to mid-height for one hour, then to the top of the tank for another hour, afterwards lowering again for a final hour. The tanks should be pumped out during Butterworth operations. Care should be taken not to apply excess steam to any empty tanks (max. 1 hour), otherwise there is a tendency for the crude to form a hard, rubber-like residue which is difficult to remove.

From observation it is considered that if the ship is to carry a clean cargo after a Boscan crude cargo, very extensive cleaning will be required, first to remove the solidified sludge; second, a chemical such as Polyclens should be sprayed on to the surface coating, afterwards

washing down with a high-pressure salt-water hose jet. This will expose the steelwork, which should afterwards be washed again using the Butterworth machines. Any scale must be removed, otherwise the crude will have a bleeding effect, causing contamination of any light oils or grain.

The crude oil is pumped from the vessel into the storage tanks where it is kept in a heated condition at 160 deg F. From the storage tanks the crude is then pumped through the pre-stage distillation unit to remove any water. It is then passed to the furnaces, where the temperature is raised to 320 to 380 deg. C, from whence it is pumped to the main distillation tower. From the bottom of the tower low grade asphalt products are drawn; at higher levels four grades of asphalt are tapped off; finally, from the top of the tower, gas oil and naphtha are collected. Certain asphalt grades are oxidised by the injection of air while in a liquid state.

The finished asphalt is poured while still fluid into paper bags, which are sealed and ranged on the drying grounds to become solid before shipment to Denmark or Switzerland. This type of asphalt is particularly suitable for making roads, the product not being greatly affected by temperature changes.

Production at this plant is the distillation of 400 to 800 tons of crude per day, giving a dispatch of 250 to 600 tons of finished asphalt per day. The gas oil and naphtha derived from the distillation is used mostly for plant purposes, but a proportion is sold to the public.

Observations:

For a motor tanker fitted with auxiliary boilers it is not recommended that this type of cargo should be carried in climates where freezing conditions can be expected. Low sea and atmospheric temperatures, with the possibility of the decks being awash in bad weather, will tax the full resources of the ship's personnel, boilers and pipe-



Filling paper bags with hot liquid asphalt

lines. Vessels of the T2 or similar type are considered more suitable for the carriage of this grade of cargo.

Disbursements at Maracaibo (Bajo Grande):

	Bs.
Pilotage from Las Piedras to E.M. Buoy	100.00
Pilotage from E.M. Buoy to Maracaibo	120.00
Customs clearance in Maracaibo	50.00
Customs despatch from Maracaibo to Bajo Grande	50.00
Visit of Health Authorities in Maracaibo	50.00
Reception of port captain in Maracaibo	75.00
Ballast Certificate in last port	25.00
Customs clearance in Maracaibo	100.00
Dispatch by port captain in Maracaibo	75.00
Pilotage from Maracaibo to E.M. Buoy	120.00
Surcharge for pilot's overtime Maracaibo-E.M. Buoy	120.00
Pilotage from E.M. Buoy to Las Piedras	100.00
Board and lodging of pilot in Las Piedras	40.00
	1,025.00

Richmond Exploration Company:

Mooring master from Maracaibo to Bajo Grande and vice-versa U.S.\$ 75.00	
Launch service to Las Piedras, Maracaibo and Bajo Grande ..	100.00
Port services	200.00
	U.S.\$375.00 = Bs. 1,158.75

Other expenses incurred:

Cables No 332—Rex I	118.80
Postage	29.65

TOTAL Bs. 2,332.20

or at 1 U.S.\$ = Bs.3.09 = U.S.\$754.76

or Sterling equivalent at U.S.\$2.79 = £1 = £270

Disbursements at Ostermoor, Germany:

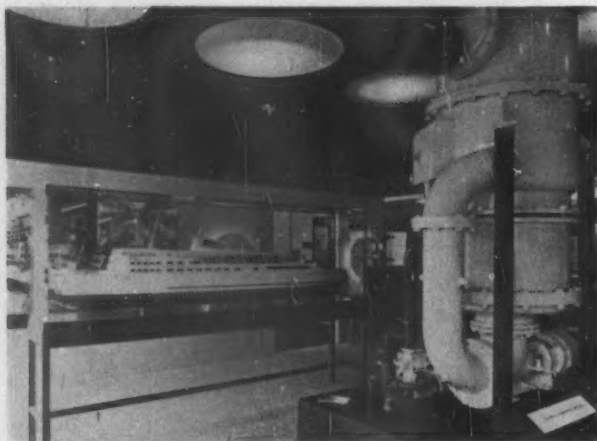
	DM
Canal dues—in (Loaded)	409.56
Canal dues—out (Ballast)	391.56
Elbe Pilotage:	
L.V. Elbe to Brunsbuttelkoog	665.00
Brunsbittelkoog to L.V. Elbe	665.00
Canal pilot's extras mooring and unmooring	110.24
Mooring boats	270.60
Lifeboat institution	26.00
Seamen's mission and report	3.00
Tug assistance—2 tugs in	1,010.00
Tug assistance—4 tugs out	2,260.00
Harbour dues...10 per 1 grt	1,138.20
Fresh water (2.00 per cu m) 500 cu m	1,000.00
	DM. 7,949.16
Taxis and transport	100.00
Agency fees	1,175.00

TOTAL = DM. 9,224.16

Rate of Exchange DM. 11.10 = £1. = £830

Acknowledgment:

Acknowledgment for assistance rendered in the preparation of the ship and the compiling of this article is given to Captain R. D. Purvis, Chief Engineer T. Kyd and the officers and crew of the *Charlton Venus*; also to Dr H. H. Liedtke, "Mawag" Ostermoor, and The United Baltic Corporation GmbH, Brunsbuttelkoog.



SJÖFART 61

THE illustration to the left shows part of the Elsinore Shipbuilding & Engineering Company's stand at the recent International Maritime Exhibition held at Helsingborg, Sweden. The ship model is of the passenger liner *Funchal* which is now nearing completion. It will be the largest passenger ship yet built in Denmark. Below this is an illustration of the Oresundsvarvet stand and to the right a section of the Götaverken stand. The enlarged photograph to the right of the picture shows part of the new shipyard at Arendal, which is scheduled for completion in 1963.



Some Aspects of Automation in Ships—II*

VIEWS ON PRACTICAL APPLICATIONS ON BOARD

By G. Kaudern

IT MAY, perhaps, seem that the foregoing gives a conservative and pessimistic view of developments. It is, however, worthy of note that while automation will certainly make great advances even within shipbuilding, it will be necessary to examine the problem from all sides if further development is to be ensured and reverses avoided. A review of what has been accomplished will give a good idea of what has hitherto been considered technically practicable and profitable. An idea of what more can be done within the foreseeable future can then be formed against the background of what has been said.

Navigation and Manoeuvring

All the larger modern ships today have autopilots, radar equipment of some sort, echo sounders, and other modern aids. These aids have hitherto seldom resulted in reduction in personnel, although it should now be sufficient with two men on the bridge under normal conditions. Total dependence on radar navigation would probably have to be controlled by law since all manually steered vessels then constitute a risk. A reduction of the watch to one man would probably require the introduction of a "dead man's handle," as on the railways, and it is to be doubted whether the authorities would approve this for bigger ships. One cannot, therefore, have less than seven men on deck, including captain and three deck officers, and this naturally limits the interest for extensive automation.

It need not always be necessary to have personnel on board for mooring and anchoring, as such tasks would be left to shore-based personnel who could come on board, like the pilot. There are, however, few vessels with crew members employed exclusively to carry out manoeuvring in harbours and for mooring. Such men are sometimes found on ferries and short-distance passenger ships and are then rather lowly paid. Some saving can, however, result from the employment of specially built quays, maybe with magnetic mooring, for such vessels. Such tasks are also eased by the use of a bow propeller which has become more common, automatic mooring winches etc.

Machinery Installations

Turbine machinery has been exhaustively treated by earlier authors and will therefore only be touched upon here.

The main points are:—

1. Automatic supervision and regulation of pressure, temperature, level, speed etc are commonly employed on a large number of vessels. This is especially so where automation results in increased reliability and economy and is thus easy to justify. Governing of turbine speed and regulation of oil and air to the boilers are cases in point.
2. A small number of tasks are still manually controlled, but some of them are most important. Such tasks are:
 - (a) Manoeuvring of the main engines.
 - (b) Regulation of the number of burners in the boilers.
 - (c) The operation of the auxiliary machinery.
 - (d) The inspection of machinery for bearing temperatures, leakages etc.
 - (e) The operation of valves which are not often used, such as valves in the cargo oil, or cooling water system.
3. Finally, manual tasks such as cleaning, painting etc.

This is the present situation as regards automation. First in turn for a change is item 2 above by the introduction of servo-manceuvring of the large valves in the cooling water and cargo oil systems. A further development is the inception of a control panel to centralise control and register information, thereby reducing the time taken in putting corrective measures into operation and the need for constant patrolling of the machinery spaces.

The next step could be considered the coordination of the supervision of the boilers, main engines, and other equipment.

This should be based on:—

- (a) The elimination of the bulkhead between the boiler room and the engine room.
- (b) The arrangement of the boilers, main engines, turbo-generators, and other important plant on the same level, as far as possible.
- (c) The incorporation of the boiler control panel in the panel for the main engines.
- (d) The introduction of automatic equipment for lighting up burners so that combustion control will be automatic instead of semi-automatic.

Item (d) can already be achieved and thus permits a reduction in the number of watch-keeping personnel by one man per watch, i.e. a total of three men, which corresponds to the interest on an investment of about £40,000.

There exists on board, however, manual tasks which cannot be suitably performed by other methods, even in the long run. It is sometimes necessary to meet unexpected situations with means which, though simple, must be quick. It will be difficult, therefore, completely to replace watch-keeping crew by automation.

It would seem that on big ships two men on watch in the engine room is a reasonable minimum, as was the case on the bridge, and the economic arguments for bridge control of the turbine machinery are thereby largely eliminated. One could, possibly, contemplate one man on watch in the engine room, assisted by an automatic alarm system, but the authorities' approval of such a system will probably not come soon.

Diesel engines.—The automatic supervision and operation of diesel engines is, especially for Scandinavian owners, a very important proposition.

Remote control or automation is technically possible for the following tasks:—

- (a) Manoeuvring of the main engine.
- (b) Manoeuvring of the auxiliary machinery.
- (c) Operation of the cooling and lubricating oil pumps.
- (d) Operation of the starting air compressors.
- (e) Operation of the steam installation.
- (f) Filling of the daily service tanks.
- (g) Filling of the cylinder lubricating oil.
- (h) Operation of the installation for separation, which can be reduced in size, and control of the viscosity of the fuel oil.
- (i) A certain amount of the draining of the bilges etc.

(a) it is understood in the following that the main engine is of the type that is usual today, i.e. a large, slow, direct-coupled crosshead type of engine. The remote control of this main engine, i.e. its control from any point in the ship, is no great problem. If there is a large distance between the engine and control panel the impulses must be transferred by other means than those used in the control panel which is currently fitted as a standard in vessels built by the author's firm. If control is to be exercised by a person without an engineer's training, e.g. a mate, the manoeuvring must be simplified to push-button drive with only "ahead," "astern" and "speed" control.

* Further abstracts of a paper read at the Meeting of the Royal Institute of Naval Architects in Gothenburg on Thursday, 7 September 1961. Mr G. Kaudern is manager of design at Kockums Mekaniska Verkstads AB.

Such a system can be developed but will, of necessity, be complicated and rather expensive. It must be able to cope with the various situations which arise, e.g. an unsuccessful attempt to start. It must also be possible to change effectively from "full ahead" to "full astern." This gives rise to some difficulty, since it is usually desirable to treat the machinery gently while in an emergency it will probably have to be treated harshly. An engineer does this instinctively. Control from the bridge will present no difficulties if there is installed a v/p propeller and an efficient governor. It would probably be preferable, even in this case, to have the motor speed governed through the fuel injection system with the governor only preventing over-speeding. A normal governor tends to overstrain a motor since it always tries to maintain the revolutions when they fall, for example, due to hard weather. The fuel injection equipment can quite easily be regulated from the bridge.

(b) The manoeuvring of the auxiliary machinery can be arranged through a simple lever or through an impulse from some controller. There is less of a problem here since no reversal of rotation is required. The auxiliary machinery in a fully automatic engine room could be started or stopped by impulses from the electrical measuring instruments depending on the power requirements. Synchronising can be done automatically. A preliminary impulse can be given before starting so that a sufficient number of generators will be in action to supply units, such as air compressors, which consume much current.

Auxiliary motors require frequent attention and much maintenance so that much is to be gained by having a generator driven by the main engine. One such generator of a new type has been installed in the latest Kockumbuilt vessel, the 25,000-tons bulk carrier *Scandia Clipper*. This installation has been developed by A.S.E.A., the owners, and the yard in collaboration.

The capacity of the generator is sufficient to deliver the power required when the vessel is at sea so that the auxiliary machinery need not then be operated. The generator which is gear driven needs the minimum of attention. The frequency and voltage are constant and independent of the propeller speed between half and full speed.

(c) Before starting the main engine, a single touch can open the necessary valves and start the necessary auxiliary machinery in the correct order so that overloading of the electrical system is avoided. In case of a failure of a pump, for example, its reserve can be brought into action

automatically, while a signal can tell of the occurrence.

(d) The air compressors can be started and stopped automatically by the pressure in the air containers so that the necessary pressure is always available.

(e) The steam plant can be arranged for automatic operation at sea. Steam pressure can be automatically regulated to the optimum level for the turbo-generators and thus ensure that the exhaust gas boiler is fully utilised. Automatic regulation of the steam supply to the heating coils etc can also be arranged.

(f) Daily service tanks, if these are at all necessary in an automatic engine room, can be filled through an impulse from a level recorder.

(g) Lubricators for the cylinders of the main engine can be kept constantly full from the storage tank.

(h) The separator installation should comprise only self-emptying separators and the heavy oil should be separated when delivered on board so that only a small installation is necessary on board.

(i) Draining of oil and water from leaks in the engine room can be automatic.

Maintenance

Maintenance on board can be reduced by arranging for the inspection and repairs of running parts ashore so that they can be taken on board ready for use. Pistons, fuel pumps, and fuel valves are suitable objects for such a system. The attention required by the fuel system can be reduced through the use of high quality materials.

It should be possible to overhaul the auxiliary diesels ashore if small high-speed units are used. The unit, with flange-attached generator, should be arranged so that it can be set up on board without accurate lining-up. Connections for piping, electrical cables etc should be planned for quick coupling. This same exchange principle can be employed with regard to other machines and pumps of limited size and weight. The existence of different makes of equipment will, however, present owners with a difficulty in their efforts to build up such a system of exchange parts.

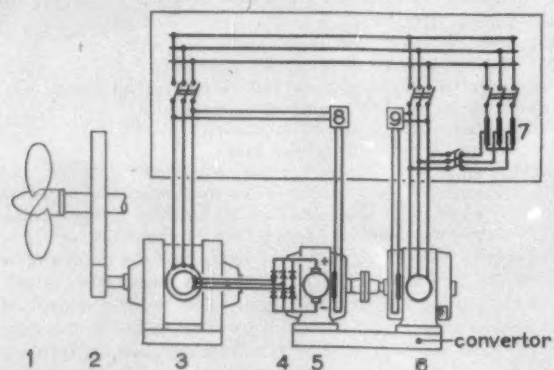
Further labour-saving measures can be taken and they deserve more attention than has hitherto been given to them. It is, thus, important that spare parts be arranged near lifting gear and that the latter is suited for its function. Better tools and other aids should also be placed at the disposal of the crew.

It is more difficult to decide how far to go in the question of supervision and maintenance where one must weigh the costs against the loss caused by the damage which may occur through a delayed intervention.

The following functions should probably be incorporated in any system of automatic supervision.

- (a) Continuous indication of the combustion in all cylinders.
- (b) Detection of smoky exhaust gases from each cylinder.
- (c) An alarm for overheating of the exhaust gases from each cylinder.
- (d) An alarm for overheating of any bearing, cylinder liner, or piston.
- (e) Detection of explosive oil mist in the cylinder block.
- (f) Detection of fire in the scavenge air system or other places.
- (g) Automatic shutdown in case of inadequate oil pressure. (Exists already.)
- (h) Automatic shutdown in case of overheating of the cooling water. (Exists already.)
- (i) Automatic temperature control of the cooling water, which already exists, and of the lubricating oil.
- (j) Automatic shutdown in case of axial displacement of the crankshaft which can be due to a worn or damaged thrust bearing. This device will be incorporated in new vessels built by the author's firm.
- (k) Continuous measurement of the output power.

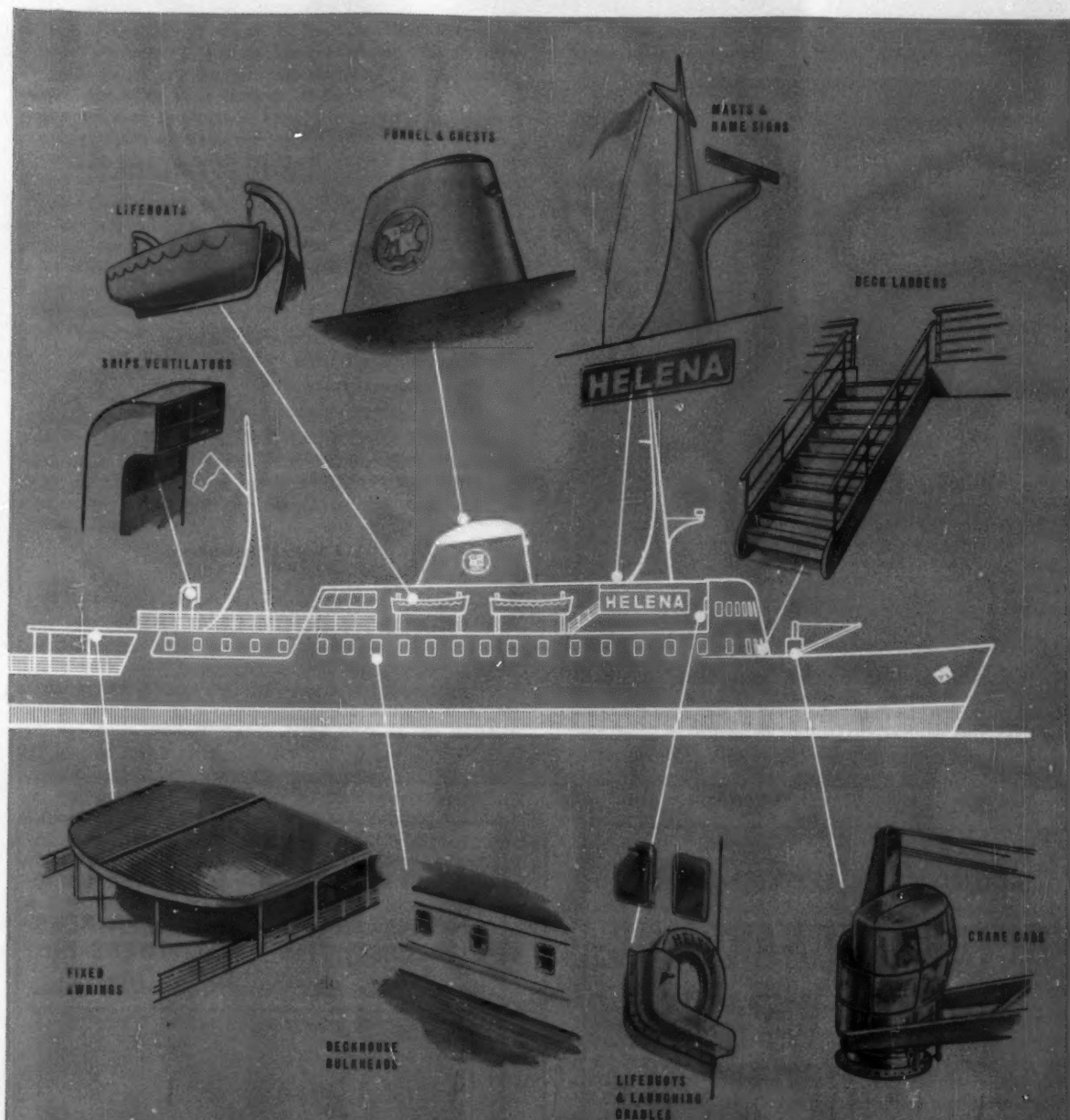
Since only two men are on watch in a diesel vessel, it is as difficult to contemplate a reduction of that number,



General arrangement of electrical power system with shaft-driven asynchronous generator

KEY

- | | |
|--------------------------|---------------------------------|
| 1 Propeller shaft | 6 Synchronous generator |
| 2 Gear | 7 Starting transformer |
| 3 Asynchronous generator | 8 Automatic frequency regulator |
| 4 Silicon rectifier | 9 Automatic voltage regulator |
| 5 D.C. generator | |



Already many of today's new lightweight components and structures are being moulded or fabricated in structural plastics—and the future possibilities are practically unbounded. More—and larger—applications are being found every day for this revolutionary material which is so easy to work and to handle, so immensely strong for its weight and so impervious to fuel oil exhaust and every form of corrosive attack.

Write for details of

BEETLE POLYESTER RESINS



B.I.P. CHEMICALS LTD • OLDBURY • BIRMINGHAM
Telephone: Broadwell 2061 Telex 33-347



Western India's leading ship repairers,
ship builders and engineers



Over 150 years in business has made Mazagon Dock the most efficient ship repairing organisation in the country. Having three private dry docks, seven building berths and well-equipped workshops, it is capable of handling every type of ship repairs.



A National Undertaking

MAZAGON DOCK LIMITED

BOMBAY-10, INDIA

PSMD-6/61

**ECONOMY & EFFICIENCY IN
QUICK TURNAROUND
VOYAGE REPAIRS
AND DRYDOCKING**

★
Also service to ships at pierside or anchor
★

**TODD
SHIPYARDS CORPORATION**

1 Broadway, New York 4 Cable ROBIN New York

Conveniently located on the Atlantic, Gulf and Pacific
Coasts of the United States

NEW YORK • BROOKLYN • HOBOKEN • NEW ORLEANS
GALVESTON • HOUSTON • LOS ANGELES • SAN FRANCISCO
ALAMEDA • SEATTLE • LONDON

London Agents:

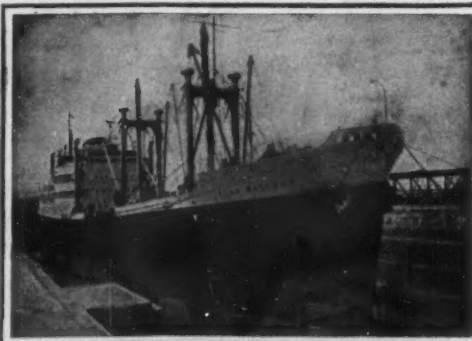
Walter C. Jones & Co., 57/8 Gresham House, Bishopsgate, London, E.C.2
Tel.: London Wall 4981 & 4360

ESTABLISHED 1825
**BLUNDELL & CROMPTON
LIMITED**

**ENGINEERS : SHIP REPAIRERS
COPPERSMITHS : FOUNDERS Etc.**

Telephone:
EAST 6001 & 3838 (8 lines)

Telegrams:
Blundell, 'Phone, London



Specialists in
URGENT HULL AND MACHINERY REPAIRS

Sole Manufacturers

BLUNDELL 'ATMOS' VALVES
for Pressure and Vacuum Relief

FLAME ARRESTERS, ETC.

WEST INDIA DOCK ROAD, LONDON, E.14

Branch Works: TILBURY DOCKS, ESSEX. Telephone: Tilbury 2033

in spite of automation, as in the case of a turbine-engined vessel. The three engineers must, even now, be on duty for eight hours per day in order to watch all the instruments assembled in a control room.

The question perhaps at issue is whether a motorman can keep watch alone in the engine room or even whether the engine room can be left quite empty. One solution would probably be to place the control room in direct communication with the bridge, and such a solution would then be best suited to vessels with the bridge and engine room in the same part of the ship.

An elimination of two of the three motormen who do not keep watch seems more valuable. This can be done by transferring an essential part of the overhauling ashore. Since these men are, however, not highly paid and are not in short supply the economic gain will not be as large as it might seem at first sight.

Other types of machinery.—The possibilities for the automation of existing conventional machinery do not seem to differ very much for various types. The type of machinery best suited to automation is undoubtedly diesel-electric propulsion by several high-speed exchangeable units, which can be placed in the most suitable positions in the vessel.

Cargo Handling

The measures which have already been taken to deal with this problem, such as the use of hydraulic hatch covers, larger hatches, trucks, containers etc, are not nearly sufficient. It is unlikely that this problem will be solved before owners definitely begin to regard their ships as just one link in a complicated international transport system. It is evident that a large part of the problem lies in this international aspect.

Scandinavian and other European ports are, for example, well equipped with cranes so that vessels which call at these ports need not have cranes or derricks. However, many foreign ports are not well equipped with cranes, with the result that all cargo liners built today must carry their own cargo-handling gear. This involves an investment of about £100,000 and reduces the deadweight by about 200 tons in a normal cargo liner. The vessel often has to wait her turn to enter smaller ports; a delay which will nullify the gain which may result from the owner's investment in low block coefficient and increased power for his vessel.

It is surely the complexity of this problem which has, so far, prevented its treatment and solution. However, it is probable that if cooperating owners were to invest in an improvement of existing ports, or in the building of better ports at new places, then the economic result of the whole transport system would be improved. It is probable, too, that a similar investment in, say, new cranes at a port, by the owners frequently using that port, would be profitable. It would also probably be profitable to make a similar investment in piers in some ports since the vessel's waiting time could thereby be reduced. Tugs, too, are often lacking and something could also be done to improve this situation. While it is uninviting to think that owners should subsidise foreign installations, it is always the economic considerations that should be decisive.

The pump man is one member of the crew who is free from watchkeeping and for whom a substitute ashore might be arranged. If the pumps are reliable, he has not a great deal more than maintenance jobs to do while at sea, although he must often work overtime when the vessel is loading or unloading.

The cargo oil system on a tanker and the ballast system on a dry-cargo ship are built up of rather simple, robust elements and it should, therefore, be possible to operate

these automatically without the use of much expensive, high-quality equipment. Some owners have already adopted this idea.

It should also be possible to simplify the cargo oil system, especially, in large tankers carrying crude oil. It does not seem necessary to have separate piping to each tank; some tanks could instead be provided with intercommunication through hatches or butterfly valves in the bulkheads. It should also be possible to reduce the number of O.T. bulkheads. Such simplification would make automation cheaper.

Conclusion

Considerable advances in the field of automation in ships have been made in recent years, in spite of the difficulties of extensive automation in this field. Probably most shipbuilders and owners are agreed today that this progress will continue. There is, however, no strong reason to force the pace, and the pace which we have hitherto achieved has been directed not only by conservatism but by well-founded practical reasons. New aids should be introduced after they have been well tested and are freely available. It is usually too dangerous to experiment on board, at least for private owners. The shipbuilding industry with its research foundations, workshops etc, should, however, do its best to assist rapid progress. The old adage that to stand still is to fall back is as valid in this field as in all others.

Investments in improvements on board other than automation may well give quicker and better results. The main reason for the increased use of automation will for some time be that it can make work on board ship easier and more attractive, as well as making the ship safer and more reliable. Direct savings through reduction of the crew will come, too, but more slowly, and will thus not be the prime incentive for automation on board ship.

NORWEGIAN ELECTRONIC EQUIPMENT

A range of electronic equipment manufactured by a Norwegian firm is now being marketed in the United Kingdom by the Derrotron Electronics Group, 24 Upper Brook Street, London W1. This group includes among its subsidiaries Beme Telecommunications Ltd, which markets electronic equipment for small ships and yachts, and notably a popular direction finder; and it is this company which will be marketing the Norwegian equipment.

The new equipment to be marketed comprises the Stentofon intercommunication system and the Stentor marine talk-back system. The former is essentially an internal loudspeaking telephone system with push-button calling, applicable equally to offices or to internal use in ships. Transistorised amplifiers with printed circuits are used. The system can be adapted to cater for numbers of extensions from two to 10,000, and can be arranged either for general intercommunication or as a master and slave system, when the slave stations can speak only to the master and not to each other.

The Stentor marine talk-back range of equipment provides for the normal deck telephone requirements, with a master station on the bridge. The units are either waterproof or rain-proof, and in some cases shockproof. They can be used with their own amplifier, or can be combined with an internal system using a common amplifier. In this case the bridge master unit overrides any other conversation.

The equipment is neat in design, well engineered, and is understood to be competitive in price. It is used extensively in Norwegian ships.

Mr DUNCAN McLEAN, of South Shields, who retired as ship-repair manager of John Readhead & Sons Ltd, South Shields, in June 1959, has died. Mr McLean was a former member of the executive council committee of the North-East Coast Shiprepairers' Association.

Oil Topics

FAWLEY TENTH ANNIVERSARY

THE Esso refinery at Fawley, on Southampton Water, celebrated the tenth anniversary of its official opening last week. Tanker traffic at the refinery's marine terminal now represents about a third of all ships using the port of Southampton. Since the *Esso Fawley* discharged the first cargo of crude oil at the jetty in 1951, nearly 37,000 ships have berthed there. Originally, 3,200ft long, the jetty was extended in 1958 by 1,200ft: it now provides five berths for ocean tankers, one of which is able to accommodate a 65,000-dwt vessel, and four for coastal tankers. Built on a site adjacent to a small existing refinery, the original extension of the Fawley refinery was begun in 1949. By the time that this stage was completed, investment amounted to some £37 million. Since then, expenditure on new capital plant and equipment has averaged £5½ million a year, and by the end of 1961 the total capital expenditure will have reached over £80 million.

More Products

THE RANGE of products made at Fawley has also seen considerable development. Originally confined to petrol, paraffin, diesel and fuel oils, it now includes important quantities of jet fuels, lubricants, bitumen, and petroleum chemical feedstocks. The significance of the latter can



Esso tankers berthed at Fawley

be measured by the fact that today nearly 20 per cent of the company's investment at Fawley is devoted to the production of feedstocks for the manufacture of synthetics, including synthetic rubber, plastics and detergents. The throughput of the refinery has increased from 6 mn to over 11 mn tons of crude oil a year. During the last 10 years, 85 mn tons of crude have been processed.

Norwegian Oil Boom

THE USE of inflatable floating oil booms to prevent the spread of oil which has leaked on to the sea is becoming an accepted technique. One such boom, manufactured by a British firm, was described in this column earlier this year (SW, 1.2.61). Now a Norwegian product is to be sold in Great Britain. This is the Helly Hansen boom manufactured by Helly J. Hansen A/S, of Moss, Norway, users of which in Norway include the Norwegian Air Force, A/S Norske Esso and the BP company Norsk Braendseolje A/S. The boom is basically a series of linked units

each consisting of a 20-cm diameter inflatable P.V.C. hose, closed at both ends. Each unit is 25m long, and is encased in a protective outer skin of PVC-coated fabric. When inflated the series of double tubes rides on the sea surface, and adjusts itself to the movement of the waves. To ensure that oil does not escape under the boom, a 40-cm deep skirt, also of PVC-coated fabric, hangs beneath the hose. This skirt is ballasted with a galvanised chain incorporated in a sealed packet in the lower hem of the skirt. To prevent choppy seas from lapping oil over the boom, the outer skin protrudes to form a fin on top of the hose. The Helly Hansen boom is supplied in mobile launching cases in which five standard lengths of tube (125m in all) are supplied ready-coupled. A CO₂ gas generating cylinder is attached to each length, and the hose can be inflated in less than 10 seconds. The PVC used for the hose, outer skin and skirt are manufactured by British Geon Ltd. The producer has not yet appointed any agency for distribution in the U.K., and inquiries should be made direct to Helly J. Hansen A/S, Moss.

RECENT SHIP SALES

MOTOR VESSEL *Ada Gorthon* (5,945 dwt, 3,663 grt, 1,770 nrt, built 1945 by Kockums M.V.) owned by Rederi A/B Gylfe; and motor vessel *Alida Gorthon* (5,920 dwt, 3,636 grt, 1,728 nrt, built 1946 by Kockums M.V.) owned by Rederi A/B Gefion, both managed by Stig Gorthon, Helsingborg, sold to Yugoslav buyers, and the money realised to go towards the cost of a 24,000-dwt bulk carrier which the Swedish firm is ordering from a Yugoslavian shipyard.

Cargo steamer *Orient Lakes* (ex-*Ocean Daphne*, ex-*Ragnar Naess*, ex-*Seapender*, ex-*Eileen*, ex-*Sandford B. Cole*, ex-*Giraff*, ex-*Sandford B. Cole*, 10,600 dwt, 7,211 grt, 4,425 nrt, built Los Angeles 1943 by the California Shipbuilding Corp) sold by Cosmos Cia. Naviera S.A., Monrovia, to Formosan buyers for \$340,000, with 50 per cent credit.

Motor vessel *Avisglen* (ex-*Kafiristan*, 10,325 dwt, 7,251 grt, 4,347 nrt, built by Wm. Doxford & Sons Ltd) sold by Aviation & Shipping Co Ltd to Greek-flag operators for £200,000, with Cardiff delivery "as lies".

Motor vessel *Ettrickbank* (9,040 dwt, 5,138 grt, 3,040 nrt, built 1937 by Wm. Doxford & Sons Ltd) sold by the Inver Transport & Trading Co Ltd (Andrew Weir & Co Ltd) to Hong Kong trading buyers for £125,000.

Cargo steamer *North Britain* (ex-*Empire Cyprus*, 9,660 dwt, 7,189 grt, 5,073 nrt, built 1945 by Lithgows Ltd) sold by North Shipping Co Ltd to overseas buyers for £118,000 with delivery Far East.

Motor vessel *Broriver* (ex-*Nagara*, 10,320 dwt, 6,525 grt, 3,980 nrt, built 1929 by A/B Gotaverken) sold by Rederi A/B Timex, Gothenburg, to Tage Berglund, Gothenburg, for about £103,000.

Cargo steamer *Liverpool Rover* (ex-*Markland*, 6,200 dwt, 4,454 grt, 2,695 nrt, built 1929 by Earle's Co Ltd) sold by Bowater S.S. Co Ltd to Panamanian buyers.

Cargo steamer *Hanne Kruse* (ex-*Solo*, ex-*Kalmarsund VII*, 233 grt, 102 nrt, built Stockholm 1902 by W. Lindbergs A/B) sold by Stig Nystrom, Malmo, to Rudolf Harmstorf Masserbau & Travewerft GmbH, Lubeck, for demolition.

Cargo steamer *Brita* (ex-*Maid of Corfu*, ex-*Mecklenburgh*, 2,703 grt, 1,538 nrt, built Rostock 1907 by A.G. Neptun) sold by Finsker Fiskeri A/B (A/B Nordstrom & Co O/Y); Lovisa, to Belgian shipbreakers, with October delivery.

Motor ore carrier *Don Manuel* (ex-*Hawthorn Hill*, ex-*Hawthorne Hill*, ex-*Cardium*, 5,847 grt, 3,140 nrt, built 1931 by Swan Hunter & Wigham Richardson Ltd, converted from tanker 1955) sold by Cia. Nav. Puerto Madrin S.A., Monrovia, to Continental shipbreakers for about £15 10s per ton light displacement.

Motor tanker *Echodale* (8,212 grt, 4,805 nrt, built 1941 by Hawthorn Leslie & Co Ltd) sold by the Admiralty to Italian shipbreakers.

NEWS FROM OVERSEAS

From THE SHIPPING WORLD'S Own Correspondents

Competitive Prices

ACCORDING to the latest report from R. S. Platou A/S, the Oslo shipbrokers, British yards now seem able to compete with regard to building costs, but due to the high interest rate, 7 per cent, they cannot compete in credit terms. German yards have been able to obtain the assistance of their authorities to grant credit and they offer generous credit terms with an interest rate of 6 per cent or under. However both German and Dutch yards are hampered by the fear of further revaluation of their currency. Some efforts have been made to sign orders in dollars, but so far with little success. Much has been written about the competitive ability of Japanese yards, but this shipbroking firm cannot see that these yards have had much success lately. In fact they cannot offer terms as favourable as those of European yards, and unless there should be a marked change in the conditions offered by European yards, the Oslo firm does not think that Japanese yards will obtain much work for European shipowners.

With regard to Norwegian owners their interests seem to be concentrated on large bulk carriers and tankers, continues the report. The better freight market has stimulated ordering, and several cases of negotiations have been recorded. For tankers, sizes of about 50,000 dwt are the rule while for bulk carriers, sizes of about 28,000 dwt are most favoured. These vessels are built to have a draught of 30ft when carrying 23/25,000 tons and 33/34ft when loaded to their maximum capacity of about 28,000 tons. Some orders for such vessels have been placed at Norwegian yards, and negotiations are in progress with foreign yards. Already Scandinavian yards are so fully booked up that vessels of over 15,000 dwt can only be placed for 1964-65 delivery.

Norwegian Orders and Sales

AMONG the latest Norwegian orders is a conversion made by Rolf Wigand, Bergen, who has now an order for a tanker of 53,000 dwt at Uddevallavarvet to be delivered in 1964, and Ludvig G. Braathen, Oslo, has ordered a tanker of 53,000 dwt from Arendalsvarvet (Götaverken) also to be delivered in 1964. This latter vessel will be fitted with a Götaverken diesel developing 21,000 bhp. An interesting order has been placed by Fred. Olsen & Co, Oslo. It is for three specially built vessels, tween-deckers of 610 dwt, for the owner's liner traffic from Norway to ports along the Rhine. The vessels have been ordered from the Astano yard, at El Ferrol, Spain, and will be fitted to carry ferrosilicon. All three vessels are to be delivered in May next.

Sigval Bergesen d.y. & Co recently sold the motor tanker *Berge Bergesen*, 33,000 dwt, to India. The vessel was built by Rosenberg Mek. Verksted in 1956 and has now been sold to Jayanti Shipping Co Ltd, New Delhi. The company was recently established, and the Norwegian vessel has been sold on credit terms. However, she is to be operated by her former owners on bareboat charter for the time being and is to continue with her old crew. This already has about 20 foreigners, and these will probably be exchanged for Indians as soon as possible. Asked whether the Indian company would build vessels at Rosenberg in future, Mr Sigval Bergesen d.y. said to the *Norwegian Journal of Commerce and Shipping* that for the time being his yard was too busy with orders already signed, but he hoped that later the Indian company, which plans to expand considerably, would build at the Stavanger yard.

Aid for Japanese Ports

THE ALREADY SERIOUS congestion at leading Japanese ports is worsening, and the Ministry of Transportation has announced an emergency programme to meet the crisis with extensive government aid. The programme includes the installation of 45 mooring buoys and six dolphins at an estimated cost of Yen 2,827 mn, of which Yen 1,916 mn will be sought as a supplementary budget appropriation for the 1961 fiscal year. Another Yen 835 mn is to be spent on expanding timber handling facilities. It is also planned to build 57,000 tons of lighters, lighter tugs totalling 3,200 hp and 40 sets of cargo-handling machinery by setting up a special corporation for the purpose financed by Yen 300 mn in government investment and Yen 1,180 in government loans. A further Yen 196 mn will be sought to expand housing facilities for port workers.

Meanwhile a new system of berth allocation has been introduced at Yokohama to relieve congestion. Previously it has been first-come, first-served; now liners on strict schedules will be given berthing priority over all other vessels.

The difficulties and irritation resulting from the congestion helped to stiffen the stand of shipping companies and shippers at a Ministry of Transportation hearing of a demand for an increase of 8 per cent in rates for port service charges, to date from July 16. They lodged strong protests against the proposed increase. The Ministry is to give a decision on the case by September 15.

More Notes from Japan

JAPANESE oil companies and tanker operators chartered 18 foreign tankers during August, according to brokers' reports. The biggest individual charterer was Tokyo Tanker with six tankers, followed by Mitsubishi Oil (three), Iino Kaiun (two), and Toa Oil (two), and Maruzen Oil, Showa Oil, Mitsubishi Shoji, Daikyo Oil and New Asia Oil (one each).

The Uruga Dock Co Ltd announced a dividend of 8 per cent for the half-year ended 30 June 1961. Gross receipts were Yen 11,939 mn, total expenditure Yen 11,554 mn and net profit Yen 384, mn. It also was announced that an affiliate, the Uruga-Tamashima Diesel Kogyo Kaisha, would pay a dividend of 10 per cent, 2 per cent above that for the previous business term. This company's statement showed gross receipts of Yen 1,848 mn, total expenditure of Yen 1,727 mn and net profit of Yen 120 mn.

New building contracts include one for a 49,000-dwt tanker to be built for Gotaas Larsen, Norway, by the Kawasaki Dockyard Co. It is the sixth tanker ordered from the same yard by the same owner since the war. The ship will have an 18,000-shp turbine and a trial speed of 17.25 knots. The contract price was given as \$6,087,000, with 70 per cent payable in instalments over 7 years, and delivery in March 1963. The Kawasaki Dockyard Co launched on August 28 the third submarine to be built in Japan since the war. Named the *Wakashio*, the submarine is of 750 tons displacement.

The 3,560-dwt naval supply ship *Multatuli* was delivered to the Indonesian Navy by Ishikawajima-Harima Heavy Industries on August 31. Designed mainly as a tender for destroyers and submarines, the vessel was built under the reparations agreement. It is equipped with a 5,500-bhp B & W diesel main engine, giving a service speed of 16 knots.

The first of three 12,000-dwt dry-cargo vessels ordered

by the Soviet Union from the Hitachi Shipbuilding & Engineering Co Ltd last year was launched on September 2 at the Sakurajima yard in Osaka. The vessels are specially designed for service in the Arctic Ocean. Named the *Omsk*, the first is due to be completed in December. It will have a 12,000-bhp Hitachi-B & W diesel main engine of 874-VT2BF-160 type and a service speed of 17.4 knots. The engine will be aft and there are four holds with a total capacity in bale of 19,800 cu m and in grain of 21,565 cu m. Cargo handling equipment will include 12 cranes and a 60-tons derrick. The contract price was given at £3,900,000, with 70 per cent payable in annual instalments over five years.

The Mitsui Shipbuilding & Engineering Co Ltd has been formally authorised to construct a 57,000-grt (85,000-dwt) building dock and a 40,000-grt dry dock at its new Chiba works. The 57,000-grt building dock will be made by extending a 30,000-grt dock now under construction at the site. It is due to be completed by March 1962. Work on the 40,000-grt dry dock is scheduled to begin in January 1963, and the dock is expected to be completed by October 1964. The company also plans to establish at Chiba a plant for the manufacture of machin-

ery and other equipment for the petrochemical, oil refining and associated industries.

Messages from Djakarta report that the State-owned shipping company, Djakarta Lloyd, is opening an Indonesia-Europe regular service with three 10,000-dwt vessels built in Japan as war reparations. The names of the vessels were given as *Setiabudhi*, *Tjokroamnioto* and *M. H. Thamrin*, and the places where they will call as Aden, United Arab Republic, Italy, Portugal, Spain, France, Britain, Belgium and Germany.

In Brief

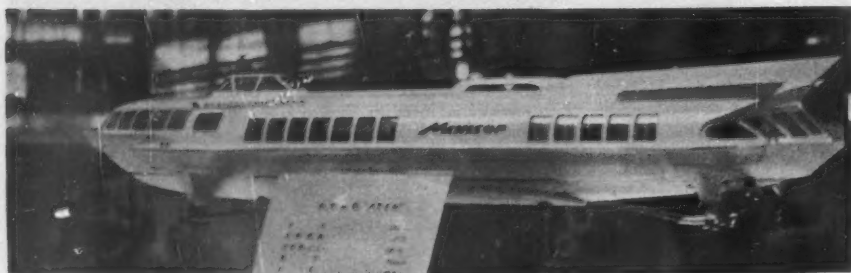
SIX CARGO LINERS now building for Farrell Lines of New York at Pascagoula, Mississippi, will have fabricated aluminium deckhouses to increase their speed, it has been announced by the Aluminum Company of America. The ships are expected to cut four days from the present running time between New York and the Cape of Good Hope, starting in 1962.

FURTHER EXPANSION of its facilities has been announced by the Mitsui Shipbuilding & Engineering Co Ltd. No 2 building berth at the Tamano shipyard is being extended in preparation for the construction of a 67,000-dwt ore/oil carrier ordered by San Juan Carriers of Liberia. The work is due to be completed next January. With a previous capacity of 53,000 dwt, the berth is the largest at the yard.

RUSSIAN HYDROFOIL CRAFT

THREE MODELS OF DIFFERENT TYPES OF HYDROFOIL CRAFT NOW IN SERVICE IN THE U.S.S.R.

The latest vessel, the "Sputnik", can carry 300 passengers and is at present undergoing trials. The "Sputnik" was built at the Krasnoye Sormovo shipyard at Gorki, on the Volga River. She is capable of 80 knots. The construction is of aluminium-magnesium alloy and is all-welded



One of the largest vessels at the present time is the 150-passenger "Meteor". This vessel has a speed of 43.47 miles per hour. This type is used in regular service on the Moskva River and between Gorki and Kuibyshev on the Volga River. Of 52.16 tons, the "Meteor" has twin 12-cylinder diesel engines each of 850 bhp driving twin screws

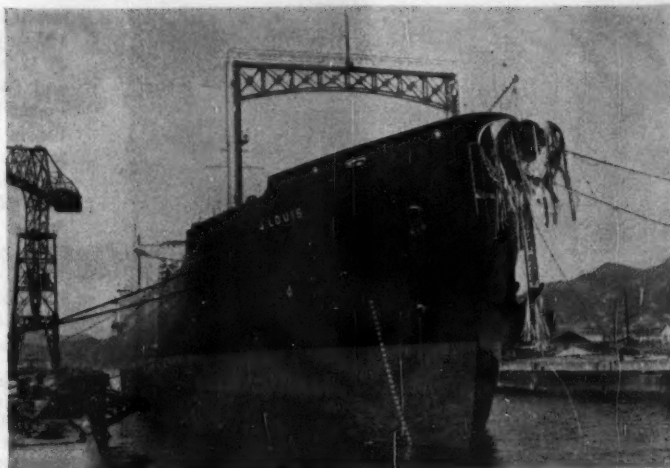
The smaller craft "Rocket" is of 25.23 tons and can carry 66 passengers at 37.26 miles per hour. This vessel is propelled by a 12-cylinder 750-bhp diesel engine driving a single screw. The hull is about 88ft 6in long and a breadth of about 14ft 5in. The draught when in motion is 3ft 8in. The "Rocket" has a fuel capacity of 1,400 kilolitres and a range of over 300 miles



The Bulk Carrier

"J. Louis"

LARGE SELF-UNLOADING
BAUXITE CARRIER



IN JAPAN a large bulk carrier, the *J. Louis*, 32,490 dwt, has been built by the Kure Shipyards Division of National Bulk Carriers Inc. for Universe Tankships Inc., an affiliate of National Bulk Carriers Inc. This vessel is the second of the world's two largest self-unloading bauxite carriers, a sister ship, the *Richard*, having been built at the same yard for the same owners in 1957. Both vessels are under long-term charter to the Caribbean Steamship Company, an affiliate of the Reynolds Metal Company, one of the world's leading producers of aluminium. The *J. Louis* was scheduled to join the *Richard* in hauling bauxite from the West Indies to U.S. Gulf ports for the company's plants.

Although primarily intended for the transportation of bauxite, the two vessels can carry other bulk cargoes as well. They are of the same general dimensions, but some refinements were made in the design of the *J. Louis*. A high degree of automation in discharging cargo has been achieved with the self-unloading equipment. It is of interest that over 110 tons of aluminium were used in the construction of this new ship; the twin funnels, eleven cargo hatches, lifeboats, shuttle conveyor chutes and gangways all being of aluminium construction. Ten of the main cargo hatches measure 45ft by 18ft each, the other hatch being 14ft by 22ft 6in.

In service it is expected that the *J. Louis* will give even better results than her sister ship *Richard* which, carrying bauxite between Jamaica and Corpus Christi, has averaged 45.5 round trips annually, as against the 40.4 round trips originally estimated.

The principal particulars of the *J. Louis* are as follows:

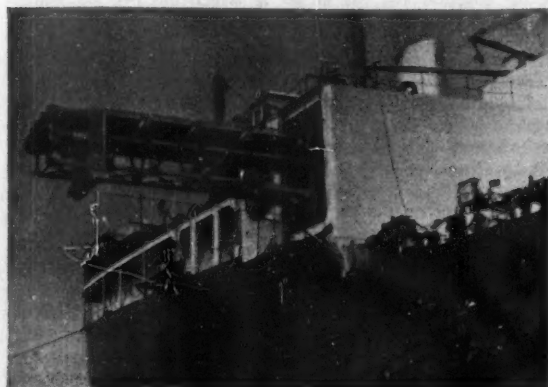
Length o.a. ...	669ft 6in
Length b.p. ...	635ft
Breadth moulded ...	90ft
Depth moulded ...	51ft
Draught ...	34ft 7½in
Deadweight ...	32,490 tons
Gross tonnage ...	19,999 tons
Net tonnage ...	12,651 tons
Machinery output ...	12,500 shp
Service speed ...	15.75 knots

The *J. Louis* has been built with the propelling machinery and accommodation aft, and the bridge amidships. All the accommodation is air-conditioned and includes three 2-berth staterooms and a lounge and other facilities for six passengers in a separate house on the poop deck.

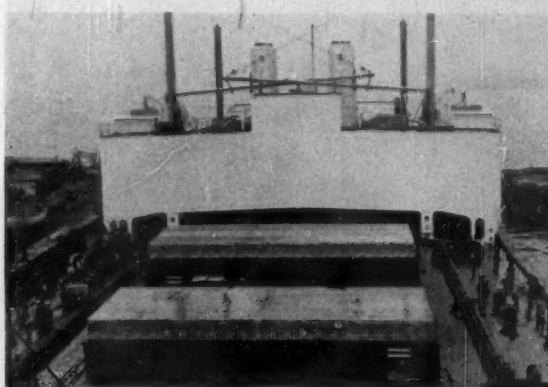
There are five main holds, each divided transversely into two sections, and a separate hold for dry cargo forward. The latter has a capacity of 53,720 cu ft. The capacity of No 1 main hold is 191,530 cu ft; No 2, 300,550 cu ft; No 3, 191,500 cu ft; No 4, 200,600 cu ft, and No 5, 181,710 cu ft.

The bottom of each hold is divided longitudinally into three V-shaped sections, which feed ore to conveyors running along their bases. These conveyors are part of the self-unloading equipment, which includes the three hold conveyors, two sets of cross conveyors, a lift conveyor and a shuttle conveyor.

The middle conveyor of the three hold conveyors is divided into a forward and an after section. The two



The shuttle conveyor extended to starboard through its housing



Two of the aluminium hatch covers in position over the main cargo hold



The 60-in wide conveyor belt and side guards. This belt feeds the shuttle conveyor

sections move in opposite directions towards the central cross conveyor, which shunts the ore carried by them to the outer hold conveyors. The latter carry all the ore aft to the second set of cross conveyors, which in turn feed it to the lift conveyor. Passing upwards through an inclined tunnel above the main engine, the lift conveyor feeds the shuttle conveyor. The shuttle conveyor can be extended outboard on either side of the vessel through the aluminium chutes to discharge the ore directly into shore facilities or lighters. The lift conveyor and shuttle conveyor are designed to handle bauxite at the rate of 2,850 tons/hour, and each of the three hold conveyors has a capacity of 1,425 tons/hour. All the conveyors are driven by electric motors.

Telescopic chutes, each consisting of six circular sections made of special non-corrosive aluminium alloy and with a detachable head, are provided for the port and starboard discharge outlets of the shuttle conveyor. Alternate discharge outlets are provided through a hinged door on each side of the stern, but these are not used at present.

Six port and six starboard wing tanks for ballast run parallel to the holds. They have a total capacity of 15,379 tons. The twin aluminium funnels are relatively short and are mounted side by side directly behind the shuttle conveyor housing. Other facilities include deck winches for handling the cargo hatches and two 10-tons derricks forward and two 3-tons derricks aft. The derricks are all operated by steam.

The propelling machinery in the *J. Louis* consists of a General Electric double-reduction geared cross-compound



One of the Vee-shaped sections of the bulk carrier's holds showing the "feed" to the conveyor belt at the bottom

steam turbine having a maximum rating of 13,750 shp at 103 propeller revolutions, and a normal cruising rating of 12,500 shp. Steam conditions are 585 lb/sq in pressure and 840 deg F temperature. Steam is generated in two Foster Wheeler type boilers made by Ishikawajima-Harima Heavy Industries Co Ltd. A five-bladed manganese bronze propeller 20ft 8in in diameter is fitted. The generator sets consist of two 800-kW 1,000-kVA 450-volts three-phase 60-cycles alternators running at 1,200 rpm, driven by Terry steam turbines running at a speed of 6,600 rpm.

RECENT PUBLICATIONS

Those who have found themselves somewhat baffled by the rapid expansion and diversification of the Stone-Platt group will welcome the new book providing information about member and associated companies. This is a simple form of reference book containing concise and factual information, and with illustrations conveying a useful impression of the group's activities. Copies may be obtained from Mr B. J. West, Stone-Platt Industries Ltd, 1a Cockspur Street, London SW1.

A new book, entitled *Survey of a Chemical Group*, has been published by Albright & Wilson Ltd, 1 Knightsbridge Green, London SW1. The book concentrates on the present organisation and gives a comprehensive account of the character and activities of the Albright & Wilson group of chemical companies as it is today.

A 12-page illustrated booklet published by Rollo-Hardy & Co Ltd, Paddockhall Road, Haywards Heath, Sussex, a member of the Compoflex group of companies, describes the manufacture, types and applications of Permabrite welded stainless tubes and their uses. The salient points made in the booklet are that Permabrite tube is at least as strong as solid drawn or "seamless" tube and, in addition, is cheaper and more readily available.

A most attractively produced booklet with illustrations in colour has been received from de Laval (Great Britain) Ltd, 129 Kingsway, London WC2. This describes the turbine driven refrigerated cargo vessel *Antigua*, built by Oresundsvarvet AB for Sven Salén AB. The main machinery and the three auxiliaries for this vessel were built by the de Laval Ljungstrom Company; refrigeration plant by STAL Refrigeration AB, and pump installations by the de Laval Ljungstrom Pump Company. Electric power equipment together with the entire deck machinery was supplied by ASEA. These firms have all collaborated in the production of this booklet.

The July 1961 issue of the *F.P.A. Journal*, the official publication of the Fire Protection Association, in addition to describing causes and reports of fires on land, gives some examples of fires on board ship. There is also a first hand account, given by the first lieutenant of HMS *Bulwark*, of the collision and fire at sea in which the two oil tankers *Melika* and *Fernand Gilabert* were involved.

The publication *Noral Aluminium Fishroom Sections* is a comprehensive catalogue of all Noral sections designed for use in trawler fishrooms. It is intended for use as a supplement to Alcan Industries Ltd's earlier production *Aluminium in Fishrooms for Trawlers*. The 26 sections listed are printed one to a page, each page having a fully dimensioned drawing of the section, a table of relevant physical properties and a brief comment on the use of the section where appropriate.

The *Maritime Statistical Yearbook*, edited by the scientific staff of the Sea Transport Economics Department of the Instytut Morski (the Maritime Institute) at Gdansk, has been published by the Wydawnictwo Morskie (Maritime Editions) at Gdynia. The yearbook contains 434 statistical tables which show the development of Polish and world maritime economies. The tables are concerned with seaborne trade, seaports, merchant fleets, freights, shipbuilding, fisheries and maritime training.

Solventless Epoxy Resin

NEW BERGER PRODUCT FOR THE PROTECTION OF SHIPS' TANKS

LAST WEEK the first public demonstration of a new solventless epoxy coating was given to a number of marine superintendents from different parts of Great Britain. This product, manufactured by Lewis Berger (Great Britain) Ltd, is the only solventless epoxy coating marketed in the United Kingdom which can be applied by spraying. It is particularly suitable for the protection of cargo and ballast tanks, the coating of deep tanks, fuel and freshwater tanks, and has already been applied to a deep tank in the Cunard liner *Arabia*.

Epoxy resins are now widely used and yield excellent paints where great toughness and mechanical strength is required, in particular where the coating has to stand up to a wide variety of chemicals. Paints of this type are generally made from modified epoxy resins which turn into a hard and impervious coating by reaction with a second component, normally a polyamine or a polyamide. To the user the second component is usually known as the catalyst or curing agent, and it has to be mixed with the paint immediately before application.

Conventional materials of this type are supplied like most other paints, dissolved in volatile solvents either pigmented or as clear lacquers. Their solvent content is usually quite high and this entails a number of disadvantages; among which should be mentioned:—

1. A good coating for maintenance purposes is usually at least 0.005in thick, and in order to provide this from such a paint it is necessary to apply several coats. In practice a minimum of four coats is essential.
2. When painting in confined spaces such as in tanks, it is necessary to use forced air circulation to remove solvent vapours.

One Application Only

When using Berger solventless epoxy coating these disadvantages do not apply. In the absence of the volatile solvent it is possible to apply a much thicker coating in one application. While in enclosed spaces it is desirable for the operator to use breathing apparatus or similar protection, it is not necessary to employ forced air circulation subsequently for the removal of solvent fumes as the coating will cure without the need for ventilation.

The solventless epoxy coating exhibits to a high degree the characteristics associated with the conventional cold-cured epoxy resin paints. It is extremely resistant to a wide variety of chemicals. In contrast to the conventional type, its resistance to food acids, such as acetic acid and lactic acid, is exceptionally high, and it is also virtually unaffected by long contact with solvents and oils. The adhesion of the material to a variety of substrates is excellent, in particular it adheres well to steel, light alloys and concrete. Nevertheless, good surface preparation and scrupulous cleanliness will secure the best results. For example, structural steel should be shot-blasted before the coating is applied.

Although the cost is appreciably higher than that of conventional epoxy resin paints, it is nevertheless competitive in use. Thus to produce a film of 0.005in dry thickness with a solvent containing epoxy enamel, at least four coats are required. This same dry film thickness can be produced in one application with solventless epoxy coating. If the spreading rate of the conventional material is assumed to be 60 sq yd/gallon, then one gallon will cover 15 sq yd as a four-coat system.

Solventless epoxy coating will cover about 40 sq yd/gallon at the same thickness of 0.005in. Therefore one gallon of the same material will cover $2\frac{1}{2}$ times the area covered by one gallon of the conventional product. As it is about twice as expensive per gallon, it can be seen that the finished job will be cheaper. This, of course, does not take into account the further saving which will accrue to the user because he has no need to employ his labour to apply several coats, and in addition he does not incur the cost of providing for forced air drying and ventilation. Furthermore, timber staging, which may remain *in situ* for several days while the various coats are drying, can be removed in a much shorter time when only one coating is necessary.

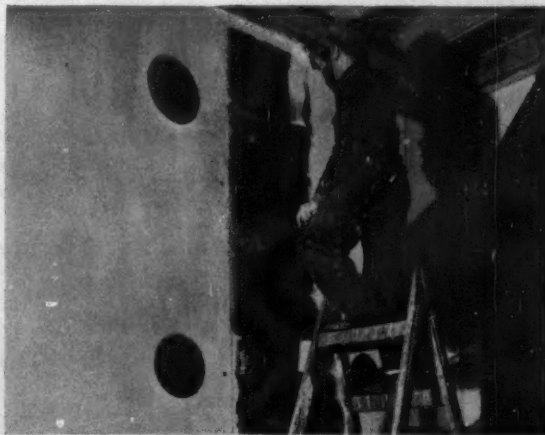
Like conventional epoxy resin paints, Berger solventless epoxy coating is a system requiring a catalyst or curing agent, and this is supplied as a separate component. The user therefore, receives two packages, one containing the main paint, the second containing the curing agent. Application may be by brush or spray. Owing to the high reactivity of this coating it is essential that equipment (brushes, spray gun etc) should be cleaned immediately after use of each mix. For this purpose a special solvent is supplied.

For certain applications it may be desirable to apply two comparatively thin coats rather than one heavy coat. The second coat should be applied after overnight cure, but in any case there should not be a delay greater than two days before applying the second coat.

Provided that the capacity of the equipment used is such that all mixed material is used within one hour, then a conventional pressure pot and gun may be used.

Even at the maximum film thickness, about 0.020in, the cure of the coating proceeds rapidly. At 60 deg F-65 deg F the paint will set in its full depth in 4/8 hours, and overnight it will be hard and dry right through. However it should be noted that the chemical reaction by which the coating is formed will continue for about seven days at room temperature, and it is only after this period that the full properties of the coating will have developed.

The spreading rate is as follows: 0.005in thick 35/40 sq yd per gall; 0.010in thick 15/20 sq yd per gall; 0.020in thick 8/10 sq yd per gall.



Berger solventless epoxy resin being applied by hand brush to the side of a deep tank in the Cunard liner *"Arabia"*

NEW CONTRACTS

Shipowners	No. of Ships	Type	Tons d.w. (gross)	Dimensions (ft.) L.b.p.(o.d.) x B x D.(dft.)	Delivery	Speed (knots)	Propelling Machinery	Total h.p.	Engine Builders	Shipbuilders
Yards in Great Britain and Northern Ireland										
Ross Group, Grimsby	1	Trawler	(800)	185 x 33.5 x 17.25	—	—	Diesel	1,800	Mirrlees Bickerton & Day	Cochrane & Sons
Ringdals Rederi A/S, Oslo	2	Cargo	15,000	—	—	—	B & W diesel	—	Shipbuilders	Harland & Wolff, Govan
London County Council	2	Sludge vessels	2,000	293 x 45 x (12.5)	1963/64	12	Tw.-scr. diesel	—	Crossley Bros	James Lamont & Co
Scrick Line	1	Cargo	11,800	470	1962	17	Diesel	10,000	Wm. Duxford & Sons	John Readhead & Sons
Overseas Yards										
Jayanti Shipping Co, India	4	Bulk carriers	24,300 (15,900)	—	1963	14.5	Sulzer diesel	9,000	Uraga Dock	Mitsubishi S.B. & E. Co
SOPONATA	1	Tanker	39,630	—	1963	—	Geared turbine	16,500	Shipbuilders	Kawasaki Dockyard
Torres Cia. Naviera	1	Cargo	15,000	—	—	15.5	Diesel	9,000	—	Osaka S.B. Co
Soc. Nazionale Metanodotti	2	Tankers	49,200	705 x 102 x 51.33	—	—	Diesel	20,900	Shipbuilders	Cant. Navali Riuniti
Universe Tankships Inc.	2	Ore/oil carriers	55,000	750 x 106 x 54	—	—	Geared turbine	16,500	G.E.C.	National Bulk Carriers, Kure
Rederi A/B Transatlantic	1	Bulk carrier	15,700	—	—	—	Diesel	—	—	Lindholms Varv
Trafik A/B Grangesberg-Oxelösund	2	Bulk carriers	35,000	—	—	—	—	—	—	Gotaverken
A. P. Moller	2	Cargo	9,700	—	—	—	B & W diesel	7,500	Shipbuilders	Mitsui S.B. & E. Co

* Order not previously disclosed.

LAUNCHES

Date	Shipowners	Ship's Name and/or Yard No.	Type	Tons d.w. (gross)	Dimensions (ft.) L.b.p.(o.d.) x B x D.(dft.)	Speed (knots)	Propelling Machinery	Total h.p.	Engine Builders	Shipbuilders
Yards in Great Britain and Northern Ireland										
Sept. —	Barra owners	Magdalena	Fishing vessel	—	54	—	Diesel	—	—	Alex. Noble & Sons
Sept. 11	Andrew Weir & Co	Testbank	Cargo	12,030	450 x 62 x 38.5	—	4-cyl diesel	6,640	Shipbuilders	Wm. Duxford & Sons
Sept. 11	R. Irvin & Sons, North Shields	Ben Lora (305)	Trawler	(370)	104 x 23 x 12.5	—	6-cyl diesel	635	Mirrlees Bickerton & Day	John Lewis & Sons
Sept. 12	Court Line	Arlington Court	Cargo	11,250	465 x 63 x 40.75 (27.2)	15.25	5-cyl H & W/B & W diesel	7,250	J. G. Kincaid & Co	Bartram & Sons
Overseas Yards										
July 9	China Merchants S.N. Co	Hai Hui (1005)	Tanker	2,840 (2,400)	268 x 42.58 x 18.67	—	Diesel	2,080	—	Ingalls-Taiwan S.B. Co, Keelung
July 9	China Merchants S.N. Co	Hai Tung (1004)	Tanker	2,840 (2,400)	268 x 42.58 x 18.67	—	Diesel	2,080	—	Ingalls-Taiwan S.B. Co, Keelung
Aug. —	U.S.S.R.	Egersheld	—	—	—	—	—	—	—	Baltic S.B. & E. Co, Leningrad
Aug. 3	Kagoshima Shosen Kaisha	Yakushima Maru	Cargo pass.	(1,150)	—	15.75	Tw.-scr. diesel	2,600	—	Mitsubishi S.B. & E. Co, Shimonoeki
Aug. 5	Nippon Cement Co	Senpa Maru	Cement carrier	4,200 (2,730)	—	11.1	6-cyl Sulzer diesel	1,800	Shipbuilders	Mitsubishi H.I. Reorg.
Aug. 16	Commissao de Marinha Mercante	Ponta Negra (3)	Cargo	(1,200)	—	—	Diesel	—	—	Cia. Commercio e Navegacao Estaleiro Lahmeyer, Rio de Janeiro
Aug. 21	Victory Carriers Inc.	Monticello Victory (1672)	Tanker	46,000 (27,800)	705 x 102 x 50 (37.58)	16.5	Geared turbine	15,000	—	Bethlehem Steel Co, Quincy
Aug. 30	China Nav. Co, Hong Kong	South Breeze	Cargo	14,000 (9,500)	482.25 x 64.33 x 39.33 (29.5)	17.75 (T)	M.A.N. diesel	8,000	Mitsubishi Yokohama	Hakodate Dock
Aug. 31	D/S A/S Myren	Gautatyr (159)	Cargo	10,250 (6,400)	405 x 57.5 x (28.25)	14.25	Diesel	4,400	Burmeister & Wain	Naksoy S.B. Co

TRIAL TRIPS

Date	Shipowners	Ship's Name and/or Yard No.	Type	Tons d.w. (gross)	Dimensions (ft.) L.b.p.(o.d.) x B x D.(dft.)	Speed (knots)	Propelling Machinery	Total h.p.	Engine Builders	Shipbuilders
Yards in Great Britain and Northern Ireland										
Sept. —	Barra owners	Magdalena	Fishing vessel	—	54	—	Diesel	—	—	Alex Noble & Sons
Sept. —	Alexandra Towing Co	Gower (929)	Tug	(165)	86(94) x 24 x 11.75 (12.5)	—	8-cyl diesel	1,020	Crossley Bros	W. J. Yarwood & Sons
Sept. 15	St Denis Shipping Co	Dukesgarth (376)	Ore carrier	15,000 (10,800)	480 x 70 x 36.25 (27.95)	12.5	4-cyl Duxford diesel	4,000	N.E. Marine	Blyth Dry Docks
Overseas Yards										
July —	Polish Ocean Lines	Phenian (154103)	Cargo	10,300 (6,660)	464.5 (504.95) x 63.5 x 41.2 (27.33)	16.25	6-cyl Sulzer diesel	7,800	H. Cegielski	Stocznia Szczecinska
Aug. —	Olsen Daughters A/S, Oslo	Fruern (1165)	Bulk carrier	15,000 (10,100)	470 x 65.67 x 40.9 (29.9)	14.75	8-cyl M.A.N. diesel	6,500	Shipbuilders	Kieler Howaldtswerke
Aug. —	Soc. Transoceanica Canopus	Pallux (740)	Cargo	14,000 (8,000)	470 x 64.5 x (30.5)	15	8-cyl diesel	7,200	Sulzer Bros	A. Vuyk & Zonen
Aug. —	Cia. Armonia de Nav. (Panama)	Armonia (1348)	Cargo	13,900 (9,400)	438.5 (463) x 61 x 40.5 (27)	14	6-cyl Sulzer diesel	5,400	Shipbuilders	Forges et Ch. de la Mediterranee
Aug. —	Black Star Line, Ghana	Offin River (312)	Cargo	6,680 (5,170)	409.5 (460.95) x 60 x 36 (27.5)	15	5-cyl Sulzer diesel	4,500	Shipbuilders	Kon. Mij "De Scheids"
Aug. 8	D. D. G. Hansa	Weissenfels (903)	Bulk carrier	11,900	472.5 (499.67) x 65.67 x 40 (30.25)	18.5	8-cyl diesel	10,800	M.A.N.	H. C. Sulcken Sohn
Aug. 12	Sanko Steamship	Toko Maru (566)	Tanker	47,250 (28,800)	629.67 x 86.75 x 45.33 (34.2)	16.2	9-cyl Sulzer diesel	18,000	Shipbuilders	Ishikawajima-Harima H.I. Aioi
Aug. 15	Daiichi Chuo Kisen Kaisha	Bintan Maru (787)	Bulk carrier	10,000 (3,250)	—	16.25	6-cyl Sulzer diesel	6,600	Shipbuilders	Uraga Dock
Aug. 15	Koyowa Sangyo Kaisha	Eiwa Maru (3920)	Cargo	3,250 (2,130)	(298.5) x 42.1 x (18.5)	11.75	8-cyl diesel	2,000	Niigata Eng. Co	Hitachi S.B. & E. Co, Mukashima
Sept. —	Skiba A/S Pacific (Knut Knutsen)	Ragna Bakke (749)	Cargo	11,050 (11,440)	510 (551.75) x 71 x 31.9 (28.67)	19.25 (T)	10-cyl diesel	12,500	Shipbuilders	Gotaverken
Sept. —	East Asiatic Co	Boribana (772)	Cargo	10,200 (8,700)	456 x 63.5 x 38.25 (27.5)	17.5	8-cyl diesel	10,000	Shipbuilders	Burmeister & Wain
Sept. 4	A. R. Appelqvist A/B	Aralizz (174)	Bulk carrier	17,100 (12,000)	480 (518.2) x 71 x 42 (30.9)	16.5 (T)	6-cyl diesel	7,500	Gotaverken	Oresundsvarvet
Sept. 15	Brodrene Olsen, Stavanger	Kongsgarad (175)	Tanker	33,000 (20,440)	(658.9) x 86.2 x (34.33)	—	10-cyl B & W diesel	—	Marinens Hovedverft	Rosenberg M.V.

MARITIME NEWS IN BRIEF

MR J. D. GLANVILLE, at present with the United Kingdom Atomic Energy Authority at Risley, has been appointed a director of Richardsons, Westgarth & Co Ltd and will assume the responsibilities of group production director at the beginning of October. Mr W. R. Jones, at present managing director of George Clark (Sunderland) Ltd, becomes group personnel director, and Mr H. Watson-Jones, at present managing director of Richardsons Westgarth (Hartlepool) Ltd, becomes group commercial director. Both remain directors of the parent company. Rear-Admiral J. G. C. Given resigned from the board on September 5 and will cease to be managing director of the Marine Division of the group on September 30 when he leaves the service of the company. From the same date the subsidiary companies (with the exception of Humber Graving Dock & Engineering Co Ltd) will become production units with centralisation of the main functions at Group Headquarters, Wallsend, and will no longer come under the direction of individual managing directors.

MR M. P. HENDERSON and Mr J. C. Goodman are to resign from the board of J. B. Westray & Co Ltd. They will both remain directors of Gray Dawes, Westray & Co Ltd. Messrs G. W. Dawes and J. C. Osborn have been appointed directors of J. B. Westray & Co Ltd from October 1.

MR D. LYNCH, deputy head of naval architecture at Sunderland Technical College, has been promoted head of the naval architecture department.

MR W. J. NICHOLSON, who at the age of 79 was believed to be one of the oldest serving chief engineers in the Merchant Navy, has died. He had been a chief engineer for 44 years and saw service during the two world wars, being torpedoed three times. In 1946 he was made an O.B.E. for meritorious service in the Merchant Navy.

MR J. MICHIE, an official of the Electrical Trades Union, has been elected secretary of the Clyde District Committee of the Confederation of Shipbuilding & Engineering Unions.

MR C. L. HUDSON has been appointed sales manager in the London office of Simons-Lobnitz Ltd.

MR J. E. HUTTON will join the board of Turners Asbestos Cement Co Ltd on October 16.

THE death has occurred of Mr J. A. V. Bonnard, a director of Bolton, Ingham (Agency) Ltd, and secretary of the Bolton Steam Shipping Co Ltd.

MR H. WESTON HOWARD has been appointed chairman, and Mr A. C. Ball managing director, of Hayward Tyler & Co Ltd, a subsidiary company of Stone-Platt Industries Ltd.

MR B. E. BLAKELY, who has been head of Finance Division, Shell Tankers Ltd since 1959, has been appointed head of Chartering Division. Mr Blakely joined the Asiatic Petroleum



NEW ADMIRALTY TUGS

Richard Dunston & Co Ltd have completed the diesel tug "Airedale", first of a pair, the other being the "Dalmatian", for the Admiralty. The vessel is of all-welded construction. In order to give good vision aft, the main engine exhausts have taken the form of streamlined uptakes situated port and starboard at the after end of the casing. The Admiralty gave the builders complete freedom in design, specifying maximum dimensions and placing considerable penalties should the ship fail to produce certain requirements. These were in fact comfortably achieved.

Co Ltd as controller of accounts in 1949. He became deputy treasurer of the Shell Petroleum Co Ltd in 1957, and was appointed deputy controller the following year.

MR F. KUNZE has joined Raytheon A.G. as assistant to the marine products manager.

COMMANDER C. DREYER has been appointed a director of Vosper Ltd. He joined the company in 1956 as sales manager.

THE death has occurred of Mr H. Lloyd Owen, marine underwriter of the Alliance Assurance Co Ltd.

* * *

SIR DAVID BOWES-LYON, a director of the Cunard Steam-Ship Co Ltd, has died. A brother of the Queen Mother, Sir David had many business activities, being a director also of Cunard White Star Ltd, and a sub-governor of the Royal Exchange Assurance. The death has also occurred of Lieutenant-Colonel A. G. Bates who retired last month on reaching the age of 70 from his seats on the board of the Cunard Steam-Ship Co Ltd, and Thos. & Jno. Brocklebank Ltd. He retired from the Army in 1930 and joined the Brocklebank company and was elected to the Cunard board in 1950. He was chairman of the General Council of British Shipping in 1951, in which year he was also chairman of the Liverpool Steam Ship Owners' Association.

LAUNCH OF NEW PILOT VESSEL FOR TRINITY HOUSE

The Trinity House pilot vessel "Preceder" was launched at the end of last month at the Lowestoft shipyard of Brooke Marine Ltd. She is the second of two sister ships, the first being named "Patrol", under construction by this firm. The main propelling machinery consists of two bridge-controlled Lister Blackstone diesel engines, each developing 495 bhp driving a single screw. The design speed is 12½ knots. Accommodation is provided for a crew of 20 and Pullman type bunks for 12 pilots. She will take up station in December as tender between the pilot cutter at the Sunk and Harwich





NEW BELFAST PILOT VESSEL

John I. Thornycroft & Co Ltd have completed the pilot vessel "Eleanor Laura" for the Belfast Pilotage Authority. She will operate from the shore-based Pilot Station established at Carrickfergus Harbour following the withdrawal from the station in Belfast Lough of the pilot vessel "Lady Dixon". The hull and decks are of single skin larch, while the keel, hog and stem are of English oak. Watertight bulkheads are of double skin African mahogany. Accommodation is provided for four pilots. The main engine is a Rolls-Royce marine diesel rated at 300 bhp maximum at 2,000 rpm.

THE HOLLAND-AMERICA LINE are offering a wide variety of cruises out of New York between December 1 and April 16. The company will be operating a total of 19 cruises, ranging in time from five days to 80 days.

UNITED KINGDOM/BRAZIL CONFERENCE LINES state that owing to the greatly enhanced cost of discharging cargo at Rio de Janeiro they are to impose a Rio de Janeiro port surcharge of 30s per freight ton on all cargo to that port on and after December 1.

As from October the Danish-owned Lauritzen Lines will run refrigerated vessels between Australian ports and the west coast of the United States and Canada. They will cross the Pacific in 16 days.

A NEW COMPANY, the Maasvlugt Scheepvaart Maatschappij (Maasvlugt Shipping Company), has been established at Rotterdam. Phs. van Ommeren N.V. and Pierson, Heldrign & Pierson participate in the capital of Fl.5 mn. The new firm operates the recently commissioned turbine tanker *Burl S. Watson*, built to the order of the Cities Service Oil Company and now renamed *Maasvlugt*.

A NEW car and passenger service on the Larne-Stranraer sea route has started with the sailing of the *Hampton Ferry*. Introduced by the Caledonian Steam Packet Co Ltd, it will be in addition to the present mail service by the *Princess Margaret*. It provides a drive-on drive-off service for cars and caravans at specially reduced rates and will operate daily from Mondays to Saturdays.

THE Middle Docks & Engineering Co Ltd, South Shields, have received a contract for collision damage repairs to the 3,600-tons collier *James Rowan*. The vessel collided with a breakwater at Shoreham, and was considerably damaged above the waterline.

SEVERAL companies and organisations representative of the shipping and shipbuilding industries are taking part in an exhibition sponsored by *The Scotsman*, which will tour the European Common Market from October 23. The exhibition "This is Scotland" will bring directly to the attention of European business executives, trade associations and Government departments the products that Scotland makes and the facilities she offers. It will be shown in Brussels, Paris, Rome, Milan, Munich, Frankfurt, Dusseldorf, Amsterdam and Hamburg. John Brown & Co (Clydebank) Ltd, the Bergius Co Ltd, Martin, Black & Co, George Gibson & Co Ltd, the Clyde Navigation Trust and the Leith Dock Commission are taking part in the exhibition. The exhibition takes the form

of individual displays of photographic materials and samples. Each of the displays is equipped with an audio telephone which will give a recorded sales message in the language of the countries visited.

ROYAL MAIL LINES' *Andes* will run four spring cruises next year. The first of these starts on March 23 while the final cruise starts on May 28.

A DEVELOPMENT PROGRAMME costing £7,000,000 is planned in Sierra Leone which will improve the port facilities at Pepel and allow major increases in the iron ore milling capacity at Marampa. This new project will increase the output of Marampa by about 50 per cent. A new loading berth at Pepel is to be built so that large ore carriers will be able to berth there and the stocking capacity for oil is also to be increased.

HECTOR WHALING LTD have moved to Cayzer House, 2 and 4 St Mary Axe, London EC3 (telephone: Avenue 2010).

THE presidential address of the Institute of Marine Engineers, entitled "The Marine Engineer and the Common Life" will be delivered by Mr C. C. Pounder on October 3 at the Memorial Building, 76 Mark Lane, London EC3.

IN AN ARTICLE "Fire Protection for Oil Storage Tanks," published in THE SHIPPING WORLD of August 16 it was inadvertently stated that the tanker cleaning berth at Rock Ferry was operated by the Mersey Tunnel Services Ltd. This, of course, should have read Mersey Tanker Services Ltd.

THE Chamber of Shipping index number of tramp shipping freights for August is 107.2 (1960=100). The index number of time charter rates for motorships is 117.9.

STATISTICS issued by the Chamber of Shipping show that 299 ships aggregating 2,549,669 grt were laid up in the world at the beginning of September. Of this total 111 of 581,962 tons were dry cargo vessels and 188 of 1,967,707 tons were tankers. British vessels numbered 41 of 323,819 tons of which 15 of 104,149 tons were dry cargo vessels and 26 of 219,670 tons were tankers.

THE BLYTHSWOOD SHIPBUILDING CO LTD have received an order from overseas owners for the complete reconstruction of a T2 tanker to a large bulk carrier. The value of this contract is about £900,000. The work will comprise the building of a new mid-body and bow which will be connected to the stern and machinery unit of the T2 tanker by Barclay Curle & Co Ltd.

FIFTY YEARS AGO

From THE SHIPPING WORLD of 20 September 1911

The quadruple screw steamer *Rochambeau*, the first liner of the French mercantile marine to be driven by a combination of reciprocating and turbine engines, has now successfully carried out her official trials off Belle Isle, after having been completed by her builders, the Société des Chantiers et Ateliers de St. Nazaire, for the Compagnie Generale Transatlantique. The principal dimensions of the *Rochambeau* are as follows: length between perpendiculars, 535 ft.; breadth overall, 63 ft. 8 in.; depth from spar deck to keel, 40 ft. Her displacement is 17,300 tons; her i.h.p. is 12,500, and her anticipated speed of 17 knots was exceeded by nearly one knot on trial. Engined by her builders, she is driven by two sets of triple-expansion main engines expanding into two Parsons turbines located at the wings.

The Anchor Line steamer *Cameronia*, built by Messrs. D. & W. Henderson & Co., Ltd., Partick, for Messrs. Henderson Bros., Ltd., Glasgow, ran trials on the Clyde on September 11. On the measured mile her speed with the tide was 18.3 knots and against the tide 18 knots. The speed required on regular service is 17 knots. She is 530 ft. in length overall, 62 ft. in moulded breadth, 36 ft. 6 in. in moulded depth, of 10,500 tons gross, and of 17,000 tons displacement when fully loaded. She has been supplied by the builders with two sets of triple-expansion four-crank engines. She is intended to sail from Glasgow to New York each fourth Saturday, and thus take her place in the weekly service of the owners.

to South
America

on the trade
routes of the world
**LEIGH'S MARINE
PAINTS** ensure
**Protection,
Appearance
and Economy**
under all
conditions
of climate
and exposure

three of the many
ships, painted and protected
on above the waterline
surfaces with
LEIGH'S MARINE PAINTS,
owned by famous
Companies operating regular
services to
South America



M.V. RAPHAEL

Owners: Lamport & Holt Line Ltd.

Photograph by courtesy of Skyfotos, Kent.

Builders: Bartram & Sons
Ltd. Sunderland.



M.V. ULSTER STAR

Owners: Blue Star Line Ltd.

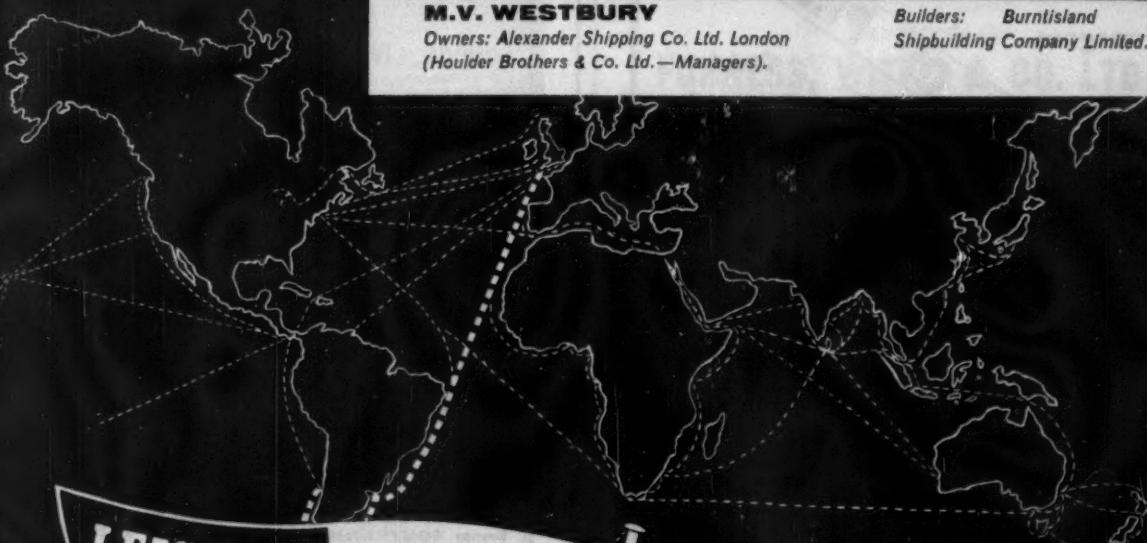
Builders: Harland & Wolff
Ltd. Belfast.



M.V. WESTBURY

Owners: Alexander Shipping Co. Ltd. London
(Houlder Brothers & Co. Ltd.—Managers).

Builders: Burntisland
Shipbuilding Company Limited.



LEIGH'S *Marine* **PAINTS**

W & J LEIGH LTD TOWER WORKS BOLTON LANCs

London Office: 15 St Helens Place London EC3

Glasgow Office: 163 St Vincent Street Glasgow G2

SPECIALISTS IN THE MANUFACTURE OF MARINE PAINTS

LEIGH'S MARINE WHITE "THE BEST WHITE PAINT IN THE WORLD"

SPROSTONS, LIMITED

3-9 Lombard Str., GEORGETOWN, British Guiana
 Cables: Sprostons Georgetown (B. G.)
 Branch Office: Port-of-Spain, Trinidad
 Subsidiary Company: Sprostons (Jamaica) Ltd., Kingston, Jamaica

**SHIPPING & AIRLINE AGENTS
 WHARF OWNERS AND STEVEDORES**

Agents for: Saguenay Shipping Ltd., Montreal
Sales Agents for: British Overseas Airways Corporation
 British West Indian Airways
 Trans Canada Airlines
 Varig Airlines

Members of International Air Travel Association

SHIP REPAIRS — MONTREAL

ENGINE, BOILER AND HULL

J. & R. WEIR LIMITED

Established 1875

Un 6-5401 33 NAZARETH STREET Cables:
 Nights & Holidays "Weirmon"
 Un 6-5138 & RE 8-9782 MONTREAL Montreal

Efficiently equipped for
 timber, wood pulp
 and all
 cargoes

PORT OF PRESTON

Quick
 Despatch
 Bunkering Facilities

Write: H. J. Hanna,
 General Traffic Manager, Preston

ADMIRALTY CHARTS

The LATEST EDITIONS of Charts,
 Plans and Sailing Directions
 published by the Hydrographic
 Dept., can be obtained from

J. D. POTTER, Admiralty Agent for Charts
 LTD. Publisher of Nautical Books,
 and Bookseller.

145 MINORIES, LONDON, E.C.3.

Telephone: ROYAL 1369 Telegrams: ADCHARTS FEN LONDON Cablegrams: ADCHARTS LONDON

Large Stocks of Nautical and Technical Books of all
 descriptions

HOULDER BROTHERS & CO. LTD.

Shipowners, Insurance Brokers, Passenger &
 General Forwarding Agents (Sea and Air)

**REGULAR FAST SERVICES to
 RIVER PLATE**

From Liverpool, London, Bristol Channel & Antwerp
 and to SOUTH AFRICA

Head Office 53 LEADENHALL STREET, LONDON, E.C.3



REGULAR SAILINGS BETWEEN
 MAIN PORTS IN THE UNITED KINGDOM

COAST LINES LTD. RELIANCE HOUSE, WATER STREET,
 LIVERPOOL, 2. phone CENTRAL 5464

PORT LINE

FREIGHT AND PASSENGERS

Regular Sailings

LONDON, LIVERPOOL, NEW YORK & CANADA
 to
 AUSTRALIA & NEW ZEALAND

PORT LINE LTD

CUNARD HOUSE, 88 Leadenhall Street, London, E.C.3
 Phone Avenue 1270 Telegrams: "Portships London Telex"

REGULAR CARGO SERVICES

Between LONDON and HAMBURG BREMEN HARLINGEN AMSTERDAM ROTTERDAM ANTWERP	TERNEUZEN GHENT DUNKIRK CALAIS BOULOGNE TREPOT	DIEPPE HAVRE CHARENTE BORDEAUX OPORTO MEDITERRANEAN PORTS
-------------------------------------------------------------------------------------------	---------------------------------------------------------------	--------------------------------------------------------------------------

Between NEWCASTLE, MIDDLESBROUGH, LONDON & SOUTHAMPTON
 and OPORTO & WEST ITALIAN & SICILIAN PORTS

Between HAMBURG, BREMEN and BRISTOL CHANNEL PORTS
 (Bristol, Cardiff, Barry, Newport, Swansea)

Between LONDON and RHINE PORTS

Between SOUTHAMPTON and ANTWERP, ROTTERDAM,
 BREMEN, HAMBURG.

Coastwise Services between LONDON and HULL

The General Steam Navigation Co., Ltd.

"Three Quays," TOWER HILL, London, E.C.3.
 Telephone: MINcing Lane 3000

BIBBY LINE

UNITED KINGDOM, CONTINENT
MARSEILLES, EGYPT, SUDAN, CEYLON
AND BURMA

All enquiries to:—

BIBBY BROTHERS & CO., Martins Bank Building,
Water Street, LIVERPOOL 2

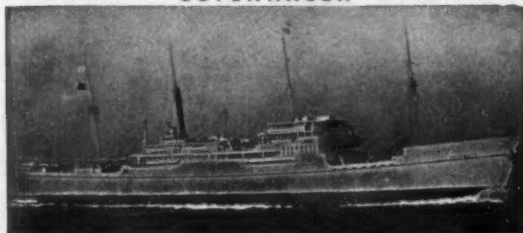
THE NEW ZEALAND SHIPPING COMPANY LIMITED

PASSENGER AND CARGO SERVICES

**To New Zealand
via Panama**

Particulars from J. B. WESTRAY & CO. LTD.
138 LEADENHALL STREET, LONDON, E.C.3.
Tel.: AVENUE 5220

THE EAST ASIATIC COMPANY LTD (Aktieselskabet Det Østasiatiske Kompagni) COPENHAGEN



FAST FREIGHT AND PASSENGER SERVICES

Agents in the United Kingdom: United Baltic Corporation Ltd., London.
Freight and Passenger Agents: Escombe, McGrath & Co., Ltd., London,
Birmingham, Leeds, Liverpool, Manchester, Middlesbrough, Southampton,
J. E. Hyde & Co., Ltd., London (for Australia Line).

SOUTH AFRICAN MARINE CORPORATION LTD

OWNERS · OPERATORS OF
SPRINGBOK & HOUSTON LINES
JOINT SERVICE FROM
East Coast U.K. & Continent
TO
South & South East Africa

Apply to SOUTH AFRICAN MARINE CORPORATION (U.K.) Ltd.

58-59 FENCHURCH STREET · LONDON EC3
Telephone: ROYal 4585 · Telex: LONDON 28417
Telegrams: Safmartiner, London, EC3

Furness Lines

Freight and Passenger Services

FURNESS WARREN LINE

LIVERPOOL
to St. John's, Nfld, Halifax, N.S., and Boston.

FURNESS PACIFIC LINE

MANCHESTER and GLASGOW
to Los Angeles Harbour, San Francisco, Portland, Seattle,
Victoria and Vancouver, B.C., via Panama Canal.

FURNESS GREAT LAKES LINE

NEWCASTLE to Cleveland, Detroit, Chicago and
Milwaukee
LONDON to Toronto, Hamilton, Cleveland, Detroit,
Chicago and Milwaukee

JOHNSTON WARREN LINE

ANTWERP, HAMBURG, SWANSEA and LIVERPOOL
to Piraeus, Volo, Thessaloniki, Izmir,
Haydar Pasha, Istanbul, Black Sea,
Roumanian and Danubian Ports.

FURNESS BERMUDA LINE

NEW YORK — Bermuda — Nassau Cruises.
Furness West Indies Cruises.

FURNESS RED CROSS LINE

NEW YORK
to Saint John, N.B. Halifax, N.S.
St. John's and Cornerbrook, Nfld.

For further information apply:

FURNESS, WITHY & CO. LTD.

Furness House, Leadenhall Street,
London, E.C.3.

Telephone: ROYal 2525

Also at LIVERPOOL, GLASGOW, NEWCASTLE, MIDDLESBROUGH,
LEITH and GRANGEMOUTH.

PRINCE LINE

MANCHESTER, MIDDLESBROUGH
ANTWERP and LONDON to
MALTA CYPRUS ISRAEL

and

TUNIS LIBYA EGYPT LEBANON SYRIA TURKEY
also Leith, Newcastle and Southampton
subject to inducement.

For further information apply:

PRINCE LINE LTD., 56 Leadenhall St., London, E.C.3

Telephone: ROYal 2525

GOUGH & CROSTHWAITE LTD., 22/24 Booth St., Manchester 2

Telephone: CENTral 7705



Distress signals

When old age, bereavement, disability or special needs occur amongst seafarers, distress signals are answered by The Royal Alfred.

Pensions, grants & allowances to the aged, widows, and the disabled—and maintenance of our Belvedere Home—involves over £70,000 yearly. We rely on voluntary gifts. Please send a donation to the Secretary.

ROYAL ALFRED MERCHANT SEAMEN'S SOCIETY

Patron: H.M. The Queen (Est. 1865) (Dept. SW) 122, BALHAM HIGH RD, LONDON, S.W. 12

SITUATIONS VACANT

VICKERS-ARMSTRONGS (SHIPBUILDERS) LIMITED

expanding the staff of their

SHIP MODEL EXPERIMENT TANK ST. ALBANS

to deal with the ever increasing quantity and complexity of research and design work for their own and other shipyards.

have vacancies for

SHIP AND DESIGN DRAUGHTSMEN

who have completed a shipyard apprenticeship and gained a Higher National Certificate in naval architecture, and who wish to do important and interesting work in connection with ship hydrodynamics and propeller design.

Successful candidates will be extremely well paid and given generous moving and settling-in allowances.

Apply, in writing, stating full particulars of training, experience and age, to

*The Superintendent,
222, London Road, St. Albans, Herts.*

PUBLIC APPOINTMENTS

THE BRITISH SHIPBUILDING RESEARCH ASSOCIATION

has a number of vacancies for Mechanical or Production Engineers for its recently formed Production Section. Applications are invited from Engineers aged 25 to 30, who have:—

- (a) Served a general engineering apprenticeship.
- (b) Are qualified technically—degree or H.N.C. plus endorsement for corporate membership of Institution of Mechanical or Production Engineers.
- (c) Had experience of production planning, and/or work study on medium or heavy steel fabrication, mechanical equipment or welding.
- (d) Have the ability to carry out investigations into all production engineering problems and write reports on their work.

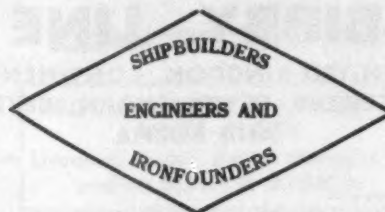
The work is based in London but it will involve visits for short periods to the North of England, Scotland and elsewhere.

The commencing salary will depend upon age and qualifications but will be within the range £800 to £1,250 per annum. The ceiling of salary in the grade is £1,500 per annum with opportunities of promotion above this ceiling to a higher grade. The appointments carry superannuation.

Applications with full particulars of education, apprenticeship, practical training and experience, should be addressed to: B.S.R.A., Prince Consort House, 27/29 Albert Embankment, London, S.E.1.

W. J. YARWOOD & SONS LTD.

Established 1840



THE DOCK, NORTHWICH, CHESHIRE

Grams: "Shippard, Northwich."

Phone: 4234 (2 lines)

NEW SHIPS

Requiring Stores, Provisions, Towage, etc., for any Port
consult

A. E. SHEPPARD & CO., LTD.

World Wide Information Service

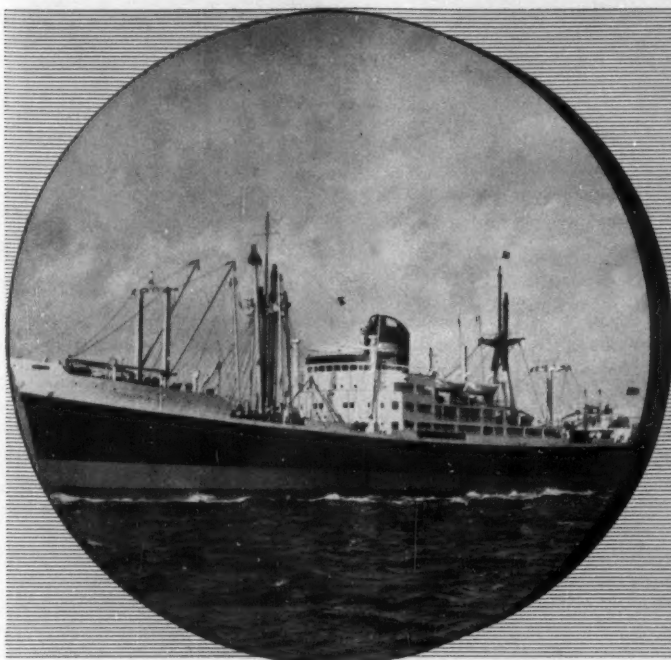
BEVIS MARKS HOUSE, LONDON, E.C.3.

Phone: Avenue 2671/2

Cables: Aesalports, London

INDEX TO ADVERTISERS IN THIS ISSUE

	Page
Alison & Co. Ltd., J. Gordon	A19
Appleby-Frodingham Steel Co.	A5
Bibby Bros. & Co.	A17
B.I.P. Chemicals Ltd.	A13
Blundell & Crompton Ltd.	A14
British & Commonwealth Shipping Ltd.	A19
Caltex (U.K.) Ltd.	A11
Castrol Industrial Ltd.	Front Cover
Cian Line	A19
Coast Lines Ltd.	A16
Decca Radar Ltd.	A3
East Asiatic Ltd.	A17
Furness Withy & Co. Ltd.	A17
General Electric Co. Ltd.	A6
General Steam Navigation Co. Ltd.	A16
Harland & Wolff Ltd.	A8
Hawthorn Leslie (Engineers) Ltd.	A19
Hawthorn Leslie (Shipbuilders) Ltd.	A19
Hellenic Shipyards Co. Ltd.	A2
Houlder Brothers & Co. Ltd.	A16
International Paints Ltd.	Back Cover
Leigh Ltd., W. & J.	A15
Mazagon Dock Ltd.	A14
Minnesota Mining & Manufacturing Ltd.	A12
Morier & Co. Ltd., Wm.	A19
New Zealand Shipping Co. Ltd.	A17
Officine Allestimento & Riparazioni Navi	A4
Port Line Ltd.	A16
Potter Ltd., J. D.	A16
Preston, Port of, Authority	A16
Prince Line Ltd.	A16
Robb Ltd., Henry	A9
Royal Alfred Merchant Seaman's Society	A18
Shell International Petroleum Co. Ltd.	A10
Sheppard & Co. Ltd., A. E.	A18
Springbok-Houston (Loading Brokers) Ltd.	A17
Sprisons Ltd.	A16
Todd Shipyards Corporation	A14
United Steel Co. Ltd.	A5
Valmet Oy.	A7
Weir Ltd., J. & R.	A16
Yarwood & Sons Ltd., W. J.	A18



FAST LINER SERVICES CLAN LINE

For Details apply to the Managers:
CAYZER, IRVINE & CO., LTD.
LONDON • LIVERPOOL • GLASGOW

SHIP REPAIRERS

**MARINE
ENGINEERS**

**IRON and BRASS
FOUNDERS**

J. GORDON ALISON & CO., LTD

Telephone :
52 BIRKENHEAD
Wires :
"GORDON BIRKENHEAD"

**Dock Engine Works,
BIRKENHEAD**

WILLIAM MORIER & Co. LTD.

COPLAND ROAD, GLASGOW, S.W.1

~ SINCE 1836 ~



**PAINTING BRUSHES and
GENERAL BRUSHWARE**

Specialising in Shipbuilders' Requirements

Passenger and Cargo Vessels • Tankers

Marine Turbines and Watertube Boilers

Doxford, Sulzer and Stork Diesel Engines

HAWTHORN LESLIE



HAWTHORN LESLIE (SHIPBUILDERS) LTD. HEBBURN-ON-TYNE
HAWTHORN LESLIE (ENGINEERS) LTD. NEWCASTLE-ON-TYNE

Largest tanker built in U.K.



s.s. "SERENIA" (66,790 d.w.t.) of the Shell tanker fleet.
Builders: Vickers-Armstrongs (Shipbuilders) Ltd.
Naval Yard, Walker, Newcastle-upon-Tyne.

painted throughout with **INTERNATIONAL** **MARINE** **PAINTS**

International Paints

Head Office: GROSVENOR GARDENS HOUSE, LONDON, S.W.1
TELEPHONE: TATE GALLERY 7070 (15 LINES)
ENGLAND TELEGRAMS: CORROFOUL, LONDON, TELEX: 24404 A/B CORROFOUL, LDN.
CABLES: CORROFOUL, LONDON SW1

REGISTERED  TRADE MARK

MAIN FACTORY IN U.K.—FELLING-ON-TYNE
ASSOCIATED FACTORIES IN

AUSTRALIA	MELBOURNE	FRANCE	ROUEN	NORWAY	BERGEN
AUSTRALIA	SYDNEY	GERMANY	HAMBURG	NEW ZEALAND	AUCKLAND
BRAZIL	RIO DE JANEIRO	HOLLAND	ROTTERDAM	NEW ZEALAND	WELLINGTON
CANADA	MONTREAL	INDIA	CALCUTTA	SPAIN	BILBAO
CANADA	REGINA	ITALY	GENOA	SWEDEN	GOTHENBURG
CANADA	VANCOUVER	ITALY	TRIESTE	U.S.A.	NEW YORK
DENMARK	COPENHAGEN	MEXICO	MEXICO CITY	U.S.A.	SAN FRANCISCO
FRANCE	LE HAVRE	NIGERIA	IKERJA	VENEZUELA	MARACAIBO

s.s. "SERENIA"—the latest and largest addition to the Shell Tanker Fleet is now in service with the best of all protective coatings—those made by "International". All the paints for this very fine tanker were supplied by "International"—and in addition to standard materials, the following special coatings were supplied—INTERTAR, Epoxide-based paint for the 29 tanks, tough and quick-drying EPISEAL Red Lead Primer (also Epoxide-based) and TROPEX extra strong anti-fouling on the hull below water. Painted to conform to Shell's new colour scheme, this vessel is just another example of "International's" ability to supply the perfect coating for every part of every type of vessel.

A WORLD-WIDE PAINT ORGANISATION

